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Original Articles

THE PARASITISM OF THE TUBERCLE BACILLUS AND ITS BEARING ON INFECTION AND IMMUNITY.*

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The present-day problems in tuberculosis which can be approached by experimental or at least by laboratory methods manifest themselves in three different ways:

1. In the somewhat chaotic condition of opinion concerning the avenues through which tubercle bacilli gain a foothold in the body.

2. In the wide divergence of opinion concerning the relation of bovine to human tuberculosis; and

3. In the general trend of studies toward the problem of specific immunity, with special reference to prevention and treatment.

These three problems, though distinct, are interrelated, and in a lecture of this kind, in which some freedom in the statement of theories and hypotheses and a rather broad treatment of the subject are not only permissible but desirable, it must be necessary to deal with each, to some extent at least. The most important of the three is the one dealing with immunity, and my statements will be grouped around and directed toward it as a focal point.

The method of treating the subject will be from a biologic standpoint which assumes as a basis for discussion a complex relationship established in time by a selective adaptation between two living organisms, of which one is a parasite of the other. Whatever pathologic processes of constant character are the expression of this parasitism, such as tubercle formation, for example, are regarded as the result of an interaction of two organisms rather than the work of one alone.

Viewed from this standpoint, this tendency toward a state of equilibrium between host and parasite is disturbed by any change of condition which influences either parasite or host. It varies with the species, race, nationality or even family of the host and many other accessory conditions. It depends on the race of tubercle bacilli. In experiments such conditions as age of culture, total period of cultivation, character of the culture medium, condition of aggregation of the bacilli, mode of application and dosage are of great importance in determining the outcome of the experiment. Similarly the outcome will vary according to the species of animal on which we are experimenting.

Much of the experimental inquiry of the past has been along too narrow lines and with the conditions too poorly defined. We have lost sight of the general relations of bacteria to animal life. Our haste to take the animal and bacterial mechanisms to pieces and to test the individual tissues and components have crowded out the broader view that the host fights more as a unit. We had almost forgotten to take into consideration the flexibility and adaptability of the micro-organisms themselves.

In a recent lecture I presented in a somewhat new aspect the relationship between host and parasite by pointing out that in a stable parasitism the parasite is in command of a mode of exit from the body as well as one of entry. Both are necessary for the continued existence of the parasite as such. The evolution of this process has brought with it two related conditions: first, a lowered virulence or invasive power of the microbe, and, second, the tendency to attack mucous membranes, cutaneous surfaces or organs in direct communication with the exterior. The lowered virulence is only another expression for localization on the external surfaces among which mucous membranes and the respiratory tract may be placed for present purposes. As a result of this adaptation tuberculosis has taken largely the form of phthisis. That is, the parasite has become localized in an organ in direct communication with the exterior, yet largely protected from miscellaneous bacterial and other parasites. Its modes of exit and of entry are identical. The bacillus may vegetate in the lung tissue and it may be easily discharged outwardly.

Phthisis, however, is only one, even if the preponderating type, of tuberculosis. Much has been made of the other manifestations. Among these, disease of the lymph nodes, bones, kidney, brain and spinal cord must be considered aberrant from the standpoint of the bacillus, for in these situations, with the possible exception of tuberculosis of the kidneys, the bacillus is doomed to an ignominious destruction, because there is no exit. These aberrant forms of parasitism are most frequent in childhood, because, perhaps, the tubercle bacillus being, as it were, keyed to adult life, is for that reason more invasive for childhood.

To the biologist these types of disease are of interest as suggesting problems in susceptibility and resistance which, as stated above, are the problems through which experimental medicine may deal practically with this disease.

In order to bring out in relief certain general biologic phenomena of tuberculosis, I shall discuss, first, very briefly the mode of invasion of the body by the tubercle bacillus, then sketch a theory of the interaction of the body and the bacillus. I shall then discuss the tuberculin reaction and the action of dead tubercle bacilli and the procedures suggested or used for producing an increased resistance of the body.

I. THE INVASION OF THE BODY BY THE TUBERCLE BACILLUS.

Bearing on immunity, the problem which deals with the primary seat of tuberculosis and its relation to the

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portal of entry deserves consideration, since it is, to a certain degree, an index of susceptibility. The theories concerned with the mode of invasion of the tubercle bacillus may be classed under four heads:

1. The inhalation of dried sputa, as laid down by Koch and elaborated by Cornet and others.

2. The inhalation of moist particles, or spray infection, as formulated and worked out by Flügge and his pupils.

3. Congenital tuberculosis, resulting from infection *in utero*, as defended by Baumgarten.

4. The infection through milk in infancy associated with a greater or lesser degree of latency until puberty and even later, the theory recently championed by Behring.

In taking some definite stand as to which of these theories, if not all, should have our support, we may gain some evidence from a study of the primary seat of the disease, i. e., that place in the body where the presence of the bacillus is shown either by the existence of actual lesions or by animal inoculations.

In the largest number of cases of tuberculosis the lungs themselves have been regarded as the primary seat of the multiplying bacilli. In children, however, other conditions frequently prevail, and the primary seat of the active process may be in the cervical, the bronchial and the mesenteric lymph nodes; many authors have called attention to this fact. Weigert[1] referred to this over twenty years ago. He refers also to similar conditions for the bronchi, the mouth and the skin.

The most recent monograph of Harbitz[2] refers to it as follows: "The general rule in cases of children is that the lymph nodes are primarily attacked and that the lungs are infected from them. General experience teaches that isolated tuberculosis of bronchial nodes is quite common while isolated pulmonary tuberculosis, with or without a slight and plainly secondary lymph node tuberculosis, is a rarity in children."

Ribbert goes so far as to assume that pulmonary tuberculosis is mainly hematogenous in origin, the source of the infection being some lymph node primarily diseased.

Petruschky, in his various publications dealing with the curative power of tuberculin, has identified himself so thoroughly with this view as to regard and to classify lymph-node tuberculosis as the first stage in tuberculosis generally.

Baumgarten[3] has contended and still contends that tubercle bacilli always produce some lesion at the point of entry into the body. In taking this position he relies on animal experiments; but there are objections to animal experiments, inherent in the difficulty of approximating natural conditions. The local lesion in animals may be due to a variety of causes, among which are local trauma, dead and attenuated bacilli and chemotactic substances due to autolysis in the cultures, and the want of adaptation of the bacillus to the species of animal used. Compare these with the entry of a solitary bacillus or perhaps several bacilli in a dried condition, without producing trauma or any chemotactic response, and we see at once the difference between the natural and the experimental mode of invasion.

The invasion of tubercle bacilli into the lymph nodes without causing disease at the point of entry has interested me since I began the study of bovine tuberculosis, in which disease such invasion is the rule, and I shall take this opportunity, therefore, of describing this phenomenon in the cattle disease more in detail. I will premise my remarks on this subject by stating that mammalian tuberculosis appears in two independent types—human and bovine. If either human or bovine type were suppressed the other would still continue. The best evidence on this point was presented by Kitasato, who demonstrated that in Japan the human disease existed in its usual activity, though the cattle disease was absent and milk formed no appreciable element in the food of children. Most other mammals at times have been found infected, either from human or bovine sources. In these a satisfactory mechanism does not exist to perpetuate a porcine or canine or feline type of disease. The bovine disease is the best, therefore, for study, next to that of man himself.

Soon after the recognition of tuberculin as a valuable diagnostic agent, astonishment and consternation were created by the discovery that a very large percentage of the best dairy cattle of the world reacted to tuberculin. Under the influence of this discovery some ill-considered laws were passed to destroy all reacting cows and their flesh, for the purpose of eradicating the disease. During these few years of active warfare, beginning in 1893, I was able to make autopsies on about 350 head of cattle which had reacted to tuberculin. This enabled me to get a good composité picture, as it were, of the early stages of the disease and to determine the primary foci with considerable accuracy. A portion of the results of this investigation was published in 1894;[4] the rest has remained in manuscript form.

In cattle, tuberculosis is an exquisitely parasitic disease, in which the chief seat of the lesions is in the lymph nodes. Next in order come the lungs, then the liver and serous membranes. Furthermore, it may occasionally be encountered in almost any other organ and tissue.

There are three portals of entry, the upper respiratory tract (mouth and nose), the lungs themselves and the small intestines. Very rarely the skin or subcutis has given entrance. The infection through these portals is indicated chiefly by disease of the corresponding lymph nodes. In the head, for example, the pair of retropharyngeal glands are the chief indices of infection. They are situated close together under the mucous membrane covering the dorsal or posterior wall of the nasopharynx. The other lymph-nodes of the head are infrequently diseased and need not be considered here. The mucous membrane is free of disease; the tonsils are very rarely infected. The progress of the infection along the chain of nodes in the neck is slow, and the infection of the head glands has little, if anything, to do with the primary or secondary disease in the thorax.

Tuberculosis due to inhalation of tubercle bacilli is by far the most common. The lungs and associated lymph nodes may be infected or only the latter. The thoracic lymph nodes in cattle belong to three systems, the tracheal and bronchial nodes closely attached to the trachea and its branches, and draining the peribronchial and perivascular lymphatics, the dorsal mediastinal

1. Deutsche med. Wochft., 1903, p. 735. "In adults, for instance, we find so frequently the familiar tuberculous lymphatics issuing from ulcerations in the intestines while the lymph glands pertaining to them show comparatively slight changes. In children, on the contrary, we often encounter the reverse, pronounced caseous changes and swelling in the mesenteric glands while no morbid process can be detected in the afferent lymphatics, even into their trunk region."

2. Jour. Inf. Diseases II, 1905, p. 143.

3. Berliner klin. Wochft., 1905, p. 1329.

4. Bulletin No. 7, 1894, Bureau. An. Ind. U. S. Dept. Agric.

chain or chains dorsal of and resting on the pillars of the diaphragm and on the esophagus, which probably drain the lymphatics of the lung tissue itself, and the interior mediastinal glands situated under the first rib; that is to say, in the apex of the thorax. That the bronchial and dorsal mediastinal glands drain the lungs is shown by their similar structure, pigmentation and contents of very fine particles of mineral matter coming from the air. The third group has no pigment and probably drains the pleural cavities only. It may also stand in some relation to the cervical nodes.

In all herds which were examined there was a considerable number of animals in which the pulmonary infection resulted in lymph-node disease only. In one herd of sixty animals, for example, of which fifty-three were infected, twenty-seven had tuberculosis of the thoracic lymph nodes, but no lesions in the lungs.

Next in frequency comes disease of the lungs themselves. The chief seat is in the large caudal lobes. In man the upper or cephalic lobes are the preferred seat. In cattle the invasion is just where one might suppose it to be when coming from bacilli suspended in air; it is in the direct line of the current and in the lobe which goes through the widest excursions. That most of the infection lodges here I also infer from the fact that the one mediastinal gland which evidently drains this portion of the lungs is the most frequently infected lymph node in the whole body. The infection through the intestines shows itself almost exclusively in tuberculosis of the mesenteric lymph nodes and in disease of the liver. Lesions of the mucous membrane are extremely rare.

This very hasty and imperfect sketch of the primary foci of tuberculosis in cattle shows that the bacilli usually enter the system, first, in the inspired air or in the food through the mucosa of the mouth or throat; secondly, through the lungs in the inspired air, and, thirdly, through the intestinal mucosa in bacilli swallowed in the food. The most striking fact is the passage of the bacilli through the mucous membrane or the air cells into the associated lymph nodes without leaving any trace visible to the naked eye or detected by manipulation. I am convinced, therefore, that Baumgarten's theory can not be maintained in the bovine disease and that tubercle bacilli may pass through at least one gateway of the body without being detained.

The tendency of the tubercle bacillus to settle down and to multiply in the lymph nodes in cattle is manifested in still another way. When the disease becomes generalized by the escape of bacilli from some primary focus into the general circulation, the secondary disease does not give rise to a miliary tuberculosis, but isolated foci may appear in various organs. Even these may be absent and the infection of the organ or the passage of bacilli through it indicated by marked affection of the corresponding lymph glands. Thus the evidence that bacilli have passed through the liver and kidneys is frequently indicated only by tuberculous portal and renal lymph nodes respectively. Evidence of udder infection is frequently presented only by tuberculous pubic lymph nodes. That submiliary tubercles may be found in these organs is not to be denied. I have found a few in the liver in an advanced stage of the disease, composed only of a giant cell and a few epithelioid cells around it. The fact remains that the lymph nodes act toward these organs very much as the lymph nodes of the lungs do in the primary infection.

There are a few other data derived from a study of the distribution of tuberculous lesions in cattle which are of interest here. In the disintegration of pulmonary foci the bacilli may pass in two directions, into the associated lymph node or outward by rupture into the air tubes, or both ways at the same time. Passage into the lymph channels is signalized by an enormous hyperplasia of the dorsal mediastinal and certain bronchial nodes. The bulk of these may be increased from twenty to thirty times. The tuberculous process is in the same stage throughout, which indicates a sudden flooding of the gland. When the discharge is outward, yellowish, caseous masses are found at the autopsy in the smaller air tubes. Ravenel has demonstrated that these masses are actually ejected during coughing. The mucosa of the air tubes themselves is not infected primarily, and eruptions, ulcers and catarrh are subsequent to the discharge of caseous matter. The latter acts both as an irritant and an infecting substance. Infection of other, notably the cephalic or smaller, lobes is brought about by aspiration of the caseous masses. These smaller lobes are more dependent and subject to the gravitation of fluids and semisolid matter.

The careful noting at the autopsy of the approximate age of the tuberculous lesions led me to conclude that infection through one of the avenues mentioned has, as a rule, nothing to do with the others. That is, there seemed to be no connection between tuberculosis of the mesenteric glands and pulmonary disease. It was noticed, however, that the stage of disease in the thoracic and abdominal lymph nodes was in many cases the same. The inference was that the animal was infected at the same time through two or even three different portals. The theory of Behring that tuberculosis starts in early life through the digestive tract is inapplicable as a rule to the bovine disease.

Concerning the mode of invasion of tubercle bacilli in rabbits and guinea-pigs through the natural portals, without the infliction of a trauma, as by subcutaneous inoculation, or the circumventing of certain channels, as by injections directly into the peritoneal cavity or the blood, I have no data of my own. There is evidence, however, to show that in these animals also the lymph nodes form the earliest foci of multiplication in feeding and inhalation experiments, and that the bacilli soon break away through this barrier and are diffused in the blood current over the body.

In the pig the ingestion of infected milk leads at first to tuberculosis of the head and cervical lymph nodes and those of the mesentery from which stations generalized infection by means of the blood takes place very soon.

A most important question is raised by this penetration of the tubercle bacilli to lymph nodes. How far may they penetrate before they settle down? Do they go beyond the first lymph node? Do they ever reach the blood directly from without? The conservative notions of twelve years ago would hardly admit the penetration of tubercle bacilli below the mucous membranes. To-day the extreme and radical notion of Behring that infection occurs early in life and may remain latent and that tuberculosis in later life largely dates from infancy is being seriously and widely discussed. This preparedness to receive and to discuss such a statement is partly due to the strides made in the study of parasitism. We have become accustomed to the complicated dual-host system of malarial and other blood parasites, the wanderings of the larvæ of uncinaria from skin to duodenum and of larvæ of certain flies from esophagus to skin. The revival of instructive studies in animal parasites brings back again the complicated life cycle of tape-

worms and flukes. Among the bacteria it seems well established that glanders bacilli may enter the body of horses through the digestive tract. Nicolas and Descos[5] showed that in the dog tubercle bacilli may appear in the thoracic duct after a meal of fatty substances impregnated with them. Ravenel[6] confirmed their observations. There is good reason, then, for anticipating discoveries or theories which might greatly simplify our view of infection.

In my studies of the bovine disease I was unable to see anything more than the localization in the lymph nodes of the invaded part or perhaps a very slow creeping along to the succeeding nodes. I am not inclined to accept the extreme view that tubercle bacilli may penetrate very far into the system at the start. The view that they may enter the blood during invasion is derived partly from artificial inoculations. In such experiments more or less injury is always inflicted and the bacilli may enter both blood vessels and lymphatics. In the spontaneous infection, the bacilli under the lymphatics only and the nodes act as a temporary or permanent barrier. The positive experiments with dogs quoted above can not very well be generalized to apply to the spontaneous disease until similar experiments have been made on other species with bacilli from various sources.

II. THE RECIPROCAL ACTION OF BACILLI AND THE INVADED ANIMAL TISSUES.

The passage of tubercle bacilli through mucous membranes and the alveoli of the lungs into the nearest lymph nodes is probably made in the same way and by means of the same agencies by which particles of soot, quartz and other mineral particles are conveyed, that is to say, as inert matter for the time being. The lodgment in the lymph nodes is probably due to mechanical agencies, the nodes acting as filters and barriers.

Here the bacilli begin to multiply and to set in motion that complex series of events leading to tubercle formation. Taking a tubercular focus in one of the thoracic lymph nodes of cattle, the first visible sign of the presence of the bacillus is the proliferation of epithelioid cells, with single nucleus or multiple nuclei. This new tissue undergoes central necrosis and caseation. The surrounding tissue proliferates to form a more or less dense capsule and the process comes to a standstill.

If we endeavor, with the aid and guidance of existing knowledge, to construct a sequence of the factors which are concerned in this process of tubercle formation, we shall find it extremely puzzling. It has occupied my attention for a number of years, yet even to-day with the help of the many currents of experimental data coming from so many laboratories I realize that we may choose several widely different interpretations without coming into violent collision with what we may regard as reliable experimental data.

At the outset it may be said that the tissue proliferation in tuberculosis is something specific in character, varying slightly from host to host. In man and cattle it is much the same. In the smaller animals, either spontaneously diseased or inoculated, the tuberculous tissue is still characteristic, but giant cells are rare or absent. These, as a rule, are absent when the process is very rapid. In those species to which the bacillus has adapted itself, man and cattle, the cell proliferation is most uniform and characteristic.

The tissue reaction leading to the quiescent focus above described I believe to be a mechanism of defense for the body, even though imperfect. I also believe that it is a mechanism of defense for the tubercle bacillus—a mutual product, as it were. The structure of the tubercle interferes with the further dissemination of the bacillus by clogging the channels of escape. The bacilli become embedded in the proliferating cells and the necrosis protects the surviving ones from further attack for the time being. We can conceive that if this cell proliferation is somewhat delayed, the final result is a much larger focus. If it is still more delayed, the bacilli may be carried into other lymph nodes of the series and may establish several foci. The stimulus for such proliferation rests somewhere with the bacillus. It was shown many years ago by Prudden and Hodenpyl, by Straus and by many others later that dead, even boiled and washed, bacilli stimulate cell proliferation of a more or less specific type. We know also that such proliferation goes on in the presence of living bacilli, for an indefinite number survive the whole process.

In view of the fact that living, though very attenuated, tubercle bacilli are far more effective in producing immunity than dead bacilli, a fact brought out by Behring, Koch, Trudeau and others, we are safe in granting that the formation of the tubercle is stimulated by something given off from the living bacilli and not destroyed by heat. The simple stimulation of cell growth by the multiplying bacilli, however, does not fully explain the matter. There is an additional element which enters here, and this probably resides in the blood and to a less degree in the lymph. The blood is evidently an unfavorable medium, as indicated by the location of tubercles in the various animal species.[7] In order to account for the facts as nearly as possible, the following theory has been evolved during the past seven or eight years:

The tubercle bacilli as they come directly from some discharging focus are provided with some protecting, more or less inert substance as an envelope. This envelope maintains a neutral chemotaxis until the bacillus reaches the connective and lymphatic tissue, where it settles down. The protecting envelope is slowly removed by the normal tissue fluids. When this has been accomplished the bacilli are able to multiply, but during multiplication they stimulate cell proliferation and, according to the activity of this process, the multiplication is checked. The bacilli are destroyed in part; the rest, through the protecting influence of caseation, remain latent, provide themselves with the protecting envelope, and if discharged outward are ready to infect another individual.

It will be noticed at once that the theory presented has much in common with the theory of opsonins which A. E. Wright has developed with so much skill and industry since 1902.[8] We may as well call the blood factor the opsonin, in deference to Wright, as the one who first called attention to it as a normal element. I do not agree with Wright, however, in attributing any special rôle to the blood leucocytes in body defense, for there is little or no evidence of this in the tissue reaction to the tubercle bacillus.

The many observations which refer to an early phagocytosis by leucocytes when bacilli are injected may be explained in two ways: First, as due to neglected fac-

5. Jour. de Physiol. et de Path. Gén., vol. iv, 1902, p. 910.
6. Jour. Med. Research, vol. x, 1903, p. 460.

7. Maragliano states that he has been able to cultivate tubercle bacilli successfully only on guinea-pigs' serum.
8. Bulloch: Practitioner, Nov. 1905; a general summary and bibliography of Wright's work.

tors inherent in the cultures used. These are the injection of too large numbers of bacilli, attenuated by long cultivation, and many of them dead, autolytic products, and the production of trauma during inoculation. The attenuated and dead bacilli fall a prey to the leucocytes, and as soon as these are disposed of the true tubercle appears. Second, it is possible that the virulent tubercle bacilli may be carried by leucocytes, as are inert particles of dust, pigment and mineral, and deposited in a favorable place. We should scarcely attribute much importance to the carrying of a particle of quartz dust from the alveolus of a cow's lung to a mediastinal gland as a protective measure.

Baumgarten justly calls attention to the errors lurking in the injection of large numbers of bacilli, and his theory that the elements of the tubercle are quite different from the wandering phagocytes has been fully sustained. The phagocytosis which appears to go on in the tubercle itself I regard as a hedging in, a suppression of multiplication rather than a destruction. Even the common appearance of bacilli in epithelioid and giant cells may be interpreted as a growing around the bacilli on the part of the proliferating elements rather than an actual ingestion. That destruction may finally occur is highly probable, but necrosis soon ensues to check this and protect the remaining bacilli. I am aware that this assumption of a protecting envelope which can be conceived of as a secretion may appear strained, but I have been unable to harmonize the facts with any other theory. In its support I presented in a recent paper facts observed in the cultivation of tubercle bacilli, some of which I quote here:

In the cultivation of tubercle bacilli the peculiar behavior of the bacilli first and last is best explained by assuming some change in the envelope or outer membrane of the bacilli. It is well known that it is very difficult and frequently impossible to obtain cultures of tubercle bacilli from tuberculous tissue in culture media in which they will grow readily after months or years of artificial cultivation. To obtain original cultures it is necessary to approximate as closely as possible the conditions obtaining in the animal body.

We can interpret this great change which the bacilli undergo in artificial cultures in two ways: 1. They make use of substances which at first could not be utilized as food. In other words, their metabolic functions have undergone a profound alteration. 2. The bacilli under artificial cultivation have eliminated something which has interfered with active absorption and assimilation.

I am inclined to accept the second theory and to assume that in the course of artificial cultivation a relatively impervious protective capsule has been gradually eliminated or modified, and, as a result, the growth and multiplication has become freer and more rapid. This elimination or modification of the envelope may go on by a selective growth of those bacilli which are most easily affected, or else the membrane may become modified in all bacilli because the active struggle with living tissue is in abeyance.

This theory also voices a condition which, I think, should be considered in any theory of immunity. I refer to the latency of tubercle and other bacteria in tissues. This latency of tubercle bacilli in lymph nodes has been demonstrated by not a few experimenters (Loomis, Pizzini, Harbitz and others).[9] According to theory here proposed, the tubercle bacilli are unable to multiply in the system when the opsonic power is too low, for the reason that the protecting capsules are not removed. Under such conditions the body is apparently immune, but really is in a state of hypersusceptibility. When the opsonic power rises the multiplication begins. This theory would also explain more rationally the greater activity of tuberculosis in certain decades of life.

It is far from my purpose to apply this theory to all invasive bacteria. Each group or species possesses certain morphologic and physiologic peculiarities which are overdeveloped or suppressed in the evolution of parasitism. The work of Denys, of A. E. Wright and of Neufeld has shown that, while lytic forces may control typhoid and cholera bacteria, they do not govern streptococcus and other infections, in which cellular activity in the form of phagocytosis plays an important part. The more rapidly growing bacteria may possess quite a different mechanism of defense. As pointed out by Dr. W. H. Welch, they may secrete substances in the body which we do not sense in the culture tube. These he calls toxins, while I should prefer to call them protective substances of the bacteria. According to either conception, they would be harmful, the toxin directly, the protective substance indirectly by neutralizing the protective substances of the animal body. Finally, the theory here presented holds only for the spontaneous disease of man and cattle, attacked by their own specifically adapted races of bacilli. In experimental work this mutual relationship is disturbed by the foreign character of the bacilli used, by the crude methods of causing infection and by the use of artificial cultures more or less modified.

III. THE PRODUCTION OF SPECIFIC ARTIFICIAL IMMUNITY TOWARD TUBERCLE BACILLI.

The overshadowing problem before society to-day is that relating to acquired immunity to tuberculosis in the individual and its influence on future generations. Can immunity be induced artificially and will the survivors transmit anything of value to their offspring? The relative mildness of endemic diseases has been at times referred to as indicating the inheritance of acquired immunity, but the increased resistance of the population to endemic diseases can be explained as a result of weeding out or selection. In a recent lecture I pointed out that, with the weeding out of the host, there goes on a weeding out of the parasite as well until two are eventually selected which maintain a kind of equilibrium toward each other. During the weeding out of the host the parasite must gain in power to keep up with the former. This selected race of bacteria or other parasites attacking a population hitherto unexposed to it may cause serious epidemics and lead to the belief that the permanently infected population had gradually inherited an acquired immunity, whereas selection may have done it. In spite of these discouraging possibilities, the face of medicine and of society in general is determinedly set toward the prevention and cure of consumption and every possible means will be tried to raise the resistance of the individual. To experimental medicine has fallen the task of seeing what can be done to raise the specific immunity artificially by making use of the tubercle bacillus, or any of its component substances, or even of hypothetical antibodies.

Historically the most important factor in the study of immunity is Koch's old tuberculin. From this, logically and illogically, all other methods of inducing immunity have radiated. It will be necessary, therefore, to deal with this first of all. The administration

9. This conception of a hypersusceptibility in the form given here is, I think, new. There are several other diseases in which this conception may prove explanatory and stimulating, and I hope to return to this subject in a later paper.

of this substance demonstrated three remarkable phenomena: 1. The great sensitiveness of the tuberculous individual and the comparative indifference of the healthy body to it. 2. A distinct thermal reaction of the tuberculous individual, that is to say, a general effect, and 3, a hyperemia of the tuberculous focus. These can be readily demonstrated on tuberculous guinea-pigs.

My interest in the tuberculin reaction was aroused in 1898, when I was giving considerable attention to the immunizing effect of tubercle bacilli, killed at the low temperature of 60 degrees centigrade. I was very much surprised to find that some of the guinea-pigs which had been inoculated with heated bacilli and in which there were no signs of active tuberculosis after eight weeks succumbed promptly to small doses of tuberculin. Others lost considerable weight, but survived.

This tuberculin reaction is closely allied to another brought out by dead bacilli, injected into an animal which has already received a dose of dead bacilli. In other words, the first dose of dead bacilli sensitizes the animal to such a degree that the second arouses a violent reaction and may even prove fatal. This had already been pointed out by Straus. Since making these experiments I have asked myself the question again and again, Why does a single dose of the dead bacilli sensitize the animal, and why does not a corresponding dose of tuberculin do likewise? So far as I was able to examine the literature, no one had succeeded in making animals hypersensitive by the use of tuberculin alone.

This hypersensitiveness I looked on as an immune reaction. The animal had been taken out of a condition of neutrality or indifference into one of irritability and defense, however imperfect. In seeking an explanation of this peculiar difference between heated bacilli and tuberculin, it became necessary to determine what the tuberculin reaction means. It is well known to the special student that there are about nine or ten theories of the action of tuberculin in print, and it seems perhaps folly to add another. Fortunately the one I believe accounts best for the facts observed by others and myself is very much like one of these nine or ten as I shall point out.

In the tubercular tissue and its immediate vicinity the tubercle bacilli have induced certain tissue changes, and with them certain new functions of the tissue have been aroused which are the result of immunization. These new properties are concentrated in the immediate neighborhood of the focus. The specific resistance is, as it were, chiefly focal and only secondarily generalized. When the tuberculin comes in contact with this focus, the former is acted on, with the result that the originally innocuous tuberculin becomes poisonous perhaps by the splitting off of some poisonous substance. An incomplete digestion I should prefer to call it. As a result of this action we have, first, the local hyperemia and, second, the constitutional effect. In other words, the tuberculin becomes poisonous by an immune reaction directed toward the tubercle bacillus. This reaction is defective and in so far dangerous to the host. The only way in which the danger can be met is for the body to produce an antibody to this second substance. So far there is little evidence to show that the body is able to produce this in any amount. The animal body has learned to protect itself by suppressing multiplication rather than by attempting to neutralize such poisons.[10]

10. This secondary poison is probably of the same nature as the aggressins recently brought forward by Ball.

This theory of the tuberculin reaction as stated above is similar to the one proposed by A. Eber[11] nearly ten years ago. According to him the action of the tubercle bacillus raises the physiologic activity of the tissue involved in disease to such a height that it becomes capable of acting on the tuberculin and splitting off from it a toxic pyrogenic substance called by him tuberculopyrin.

My own interest in the tuberculin reaction was aroused by the query why a dose of dead tubercle bacilli can make the body sensitive while a corresponding amount of tuberculin does not. The reason why the injection of tuberculin as such does not lead to a subsequent tuberculin reaction as a result of one or several doses lies in the fact that tuberculin after injection is distributed throughout the body. Each cell receives but a brief exposure to a very minute quantity and probably much is eliminated unused. When dead bacilli (or even living ones) are introduced they soon settle down, and, the process of disintegration being very gradual, the tissues in which they are deposited receive a continuous, even though infinitesimal amount of tuberculin from the bacilli, and as a result of this persistent stimulus over a small area the tissue becomes focally active.

If this theory be true, the effect of the old tuberculin in establishing resistance appears in a new light. It would, first of all, exercise its chief function of being converted into a poison. During this conversion it uses up the antibody of the tuberculous focus. The benefit to be derived from it would be, first, in stimulating the reproduction of this antibody in the focus and around it, and, secondly, to accustom the body gradually to the action of the secondary poison set free from it. According to Koch, it would be antitoxic, but in a very roundabout way. Nevertheless, the use of the very minute doses now generally advocated may accomplish a kind of one-sided resistance, which large doses, as given in the past, might strain and even injure. This view would also oppose doses of tuberculin which set free enough toxin to cause fever, and this mode of administration has been interdicted.

This theory, furthermore, harmonizes with certain recent experiments which show that tuberculin reactions are diminished in severity when accessible foci are removed before injecting the tuberculin.

The gradual loss of the tuberculin reaction may be accounted for in one case by the tissues becoming gradually accustomed to the secondary tuberculin poison, in one another by the subsidence of the active process and the gradual loss of the antibody production on the part of the healed or quiescent focus, in a third by a temporary exhaustion of the antibody which activates the tuberculin in the focus. It is well known that in cattle the tuberculin injection following another similar one at a short interval appears earlier and is weaker and shorter in duration than the first or it may not appear at all. If twenty times the initial dose be injected reaction does occur, but here we may have other substances enter which were present in the small dose in insignificant amount. Just as in diphtheria toxin the toxon elements began to appear when we gave up the ten-minimum fatal dose for the fifty or one hundred in testing the strength of antitoxins.

That I should have given preference to heated tubercle bacilli as immunizing agents rather than to the old tuberculin is obvious from the theory of action of the latter which I have formulated. Fully a year before I

11. Deuts. Ztschr. f. Tiermed, XXI, p. 34.

began my experiments with tuberculin Koch, in 1897, had issued his new tuberculin T.R., which consisted of the ground, unheated bodies of tubercle bacilli. This was a distinct theoretical advance on the old tuberculin and was abreast of the new views of immunity. The old conception of the direct curative action of tuberculin had been abandoned. The issuing of the bacilli *in toto* tacitly acknowledged that the body must become immune to the entire bacillus and its metabolic products, for as long as we do not know which substance of the bacillus plays the most important and decisive rôle in arousing the defensive reaction of the body we must inject all of them.

There have been many other investigators working along similar lines. Some have kept us regularly informed of their forward and backward movements in this puzzling territory; others have kept to themselves their wanderings. The literature has grown to stupendous proportions, and any one who enters this field with any suggestions or theories is certain to do injustice to some precursor, for almost every possible interpretation has been stated somewhere before.

Among the more thorough and distinguished investigators a few may be mentioned. Maragliano has essayed immunity with the watery extract of tubercle bacilli and has studied assiduously the various toxins of the bacillus. Denys has tried to immunize with the bacteria-free filtrate of cultures. There have been notable contributions to the chemistry of the tubercle bacillus by Kühne, Ruppel, Levene, de Schweinitz and others. The noteworthy work of Trudeau, Baldwin and their associates has greatly contributed to the steadying of our advance in the knowledge of immunity and its bearing on clinical medicine. These observers have also been untiring in separating the wheat from the chaff of that which has come to us from abroad. Very recently Behring announced the use of tubercle bacilli for immunization or treatment which, according to brief reports, have been extracted with water, 10 per cent. salt solution and, finally, alcohol, ether and chloroform. With this bacillar skeleton, as it were, he expects to obtain better results. The details of the process are not yet generally known.

The attempts at the preparation of a therapeutic serum I shall pass over, since there does not yet appear to be a very satisfactory experimental basis for estimating its efficiency. It will in any case remain of merely theoretical interest in the cure of tuberculosis, owing to the difficulty of preparation and the probable cost.

In spite of this array of painstaking contributions to the biochemistry of the tubercle bacillus and the relation of its various component elements, secretions and metabolic products to the production of immunity, we still appear to be at the beginning. The recent studies of Koch, Behring and Pearson in bovine immunity produced by the intravenous injection of living human bacilli, and the same experiments of Trudeau on smaller animals, bring us back to the old principle first brought out by Pasteur in 1880 in his studies of protective inoculation toward fowl cholera. We have not only retraced our steps to the whole bacillus, but even to the living attenuated bacillus.

A very pertinent question, one which has undoubtedly been put by every physician and experimenter dealing with tuberculosis, suggests itself here: If immunity does not appear in the course of tuberculosis, why should we expect to produce it by artificial means? An answer to this question involves many factors, on only one of which I shall touch.

Immunity in tuberculosis consists of two elements, the focal or local immunity due to the multiplication of tubercle bacilli in a given territory, and a less pronounced general immunity due to the biochemical activities of the local process. If the general immunity becomes quite strong, or if the original resistance is so great that a little impulse makes it complete, then a second attack is not likely to occur. This, alas, is not ordinarily the case.

Granted that the first infection manifests itself, as a rule, in certain lymph nodes, two different results may be looked for. Either it leaves an immunity which promptly fixes the next invader, closes in on him so that multiplication is speedily checked, or else in the less responsive the second invaders, lodging in the lungs themselves, may prove disastrous, owing to the destructibility of the lung tissue itself and the chance for secondary infections. This would mean that in the first type of individual the early infection protects against a second; in the second type, the first apparently, but not really, predisposes toward a second, the distinction being due to a difference in the rousing of immunizing factors.

In cattle the short life of the individual does not enable us to realize much from a study of primary and subsequent infections, but the impression that I have gained from a careful repeated study of the autopsy notes is that old lymph-node tuberculosis is rarely associated with fresh pulmonary disease. Cattle, I believe, are nearly immune and it requires but a little to tip the scales in favor of the host.

The acquired general immunity following the first attack is shown in a variety of ways. Experimentally the second local lesion in the guinea-pig, as pointed out by Koch, is a different process from the first. Clinically, the lymph-node tuberculosis of childhood later becomes an organ tuberculosis. The bacilli are literally held up in the portal of entry, and pulmonary disease becomes the type of the second stage or of later life. The first infection of the intestines lodges and multiplies in the mesenteric lymph nodes. When lung disease is established and the sputum is swallowed, tuberculous lesions of the mucous membrane are very common; those of the lymph nodes, slight or absent. Behring is quoted by some one as stating that this infection is due to a hypersensitiveness. I should say a partial immunity, for here also the bacilli are held up at the place of entry. These facts were noted long ago, but not explained, by Weigert,[1] as stated at the beginning of the article.

To the physician this phenomenon of repeated infection meant no immunity. And, indeed, so far as the patient is concerned, it is as good as none. It is more dangerous owing to secondary infection, but it carries in it the germ of possibilities, namely, the immunization to a degree which will totally prevent the second attack. In the meantime it may not be amiss to point out here the true significance of protecting patients from repeated infection. I should place this among the most important of the details of treatment, and it is not to be denied that the careful protection afforded tuberculous patients nowadays in sanatoria may have a powerful influence in raising the percentage of recoveries. To this opportunity for repeated infection on which I would place much more responsibility than on diffusion of early or latent infection in the body itself, there must be added the chance of acquiring tubercle bacilli of much higher invasive powers and, therefore, more dangerous.

At this point I may be permitted to digress a moment to refer to the peculiar localization of tuberculosis in the upper or cephalic lobes of the lungs. Numerous attempts at explanation have been made chiefly on anatomic bases. Some would make pulmonary disease hematogenous in origin, the infection coming from some disrupted primary focus, probably a caseous lymph node. The following evidence offered by experimental and comparative pathology on this puzzling phenomenon is somewhat contradictory, but suggestive.

I have already stated that in the spontaneous disease of cattle the largest or caudal lobes are most frequently diseased primarily or else those lymph nodes associated with them. The smaller cephalic lobes are more often secondarily diseased from aspirated caseous matter. This is as we should expect to find it if the germ lodges and multiplies where we should expect most bacilli to lodge.

Some years ago I noticed in several rabbits which had been inoculated into the ear vein with human tubercle bacilli and kept a long time the following peculiar condition: The bacilli which ordinarily are deposited in every part of the lungs and which, if virulent, fill the entire lung tissue with tubercles, had been suppressed and destroyed excepting along the thin border of both cephalic lobes, which were solid and tuberculous. It is probable that this condition can be frequently induced if the tubercle bacilli are very finely ground before injection so that large masses may not lodge and inevitably produce foci anywhere. These two facts, the spontaneous disease in cattle and the induced disease in rabbits, both favor, one negatively, the other positively, the hematogenic origin of tuberculosis of the upper lobes in man; but there is a third element in the form of a general principle which, to my mind, holds the balance. This may be briefly stated as follows:

Bacteria multiplying by preference in certain localities as *loci minoris resistentiæ* will reach these places if they have access to them through the blood or through natural openings. For example, typhoid bacilli injected into the blood will probably cause ulceration of the intestinal lymph apparatus just the same as if ingested. Applying these various data to pulmonary disease, there is no more reason to assume the suppression of tubercle bacilli entering by one route, the air, than by the other, the blood. I am myself inclined to believe that the bacilli inhaled are suppressed and destroyed except in the apices in susceptible individuals.

(To be continued.)

A PLEA FOR THE INTERNATIONAL STUDY OF CARCINOMA.*

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CHICAGO.

"Sed opertet privatis utilitatibus publicas, mortalibus æternas anteferre; multoque diligentius muneri suo consulere, quam facultatibus."

INTRODUCTORY REMARKS.

Humanitarian Service.—From time immemorial the medical profession has been in search of ways and means to reduce the sum of human suffering in its efforts to prevent and treat disease.

The physicians of all times, more than any other class of men, have devoted a large part of their time, talents and energies to promote the happiness, welfare and usefulness of their fellow-beings without any expectation of a pecuniary gain for their unselfish, self-imposed and often arduous task.

The philanthropic spirit has always animated medical men and their organizations, large and small. A liberal part of the transactions of the medical societies throughout the entire civilized world is devoted to subjects which have a bearing on the prophylaxis of disease. The public will never realize the vast amount of work that has been done in this direction by the mass of the profession inspired by men of the highest scientific attainments. The growing knowledge of the real cause and nature of disease, the outgrowth of original research and accurate scientific investigation by a host of earnest students the world over has already resulted in erasing from our nomenclature a number of formidable diseases and in limiting the spread of deadly epidemics.

Preventive Medicine.—The crowning glory of our profession in the future will be preventive medicine. The sphere of the general practitioner will become more and more circumscribed; that of the scientist will expand and keep step with the progress and advancements of preventive medicine. Rational preventive medicine had its origin contemporaneously with the foundation of the new science of bacteriology, and its further development and sphere of usefulness must necessarily depend on the progress and expansion of the latter. We may confidently look to the near future for more men like Jenner, Haffkine, Lister, Pasteur and Koch, who will do their good share in blotting out preventable diseases.

Surgery has not been idle and has contributed its liberal part toward reducing the death rate and diminishing human suffering. Based on the teachings of Pasteur and Lister, a system of aseptic and antiseptic precautions has been gradually perfected which is now in force wherever modern surgery is practiced and which has been the means of almost entirely eliminating from wound complications the disastrous affections due to infection and has greatly increased the range of operative procedures. Primary healing of wounds is now the rule, instead of the exception, as was the case only a quarter of a century ago. Hospital gangrene, the black monster of military and civil hospitals less than half a century ago, has disappeared from the face of the earth never to return. Erysipelas and pyemia have become pathologic curiosities. Secondary hemorrhage, such a frequent and dangerous occurrence formerly, seldom now disturbs the peace of mind of the operating surgeon since he has come in possession of the aseptic absorbable ligature.

CARCINOMA A MYSTERY.

There is one dark chapter in surgery to which I wish to call your attention on this occasion, and in which I desire to enlist the interest of the medical profession throughout the entire world—it is carcinoma. It is an old, old subject, which has interested the profession for centuries and, which, notwithstanding the prodigious efforts which have been made to solve the mystery of its real cause and nature, remains unexplained. Carcinoma is so common and, according to recent statistics, unquestionably on the increase that it behooves our profession to make use of every possible means and avenue to discover its real cause and nature and, having accomplished this, to open up the way for its prevention and more successful treatment.

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* Oration for the United States, delivered before one of the general sessions of the Lisbon International Medical Congress, April 19-26, 1906.

The prevalence of this disease, its relentless course and obstinacy to all known methods of treatment surround it with the gloom of fear and hopelessness to the public. By hearsay and observation the masses of the people are firmly impressed with the idea that carcinoma is a fatal disease, and when such a diagnosis is made it is regarded as a death sentence. The medical profession is equally aware of the painful fact that in the great majority of patients afflicted with this disease it proves fatal within three to five years, and that the only cases which recover permanently are those in which an early radical operation is performed.

A LOCAL DISEASE.

One feature of this dreadful disease has been definitely settled, and that is that it begins as a local affection, and it is in this stage that it is amenable to successful treatment by an early radical operation, and it is safe to state that not more than 25 per cent. of all the patients who apply for surgical aid are within reach of successful operative intervention. Left to itself, the intrinsic tendency of the disease is to destroy life. Its malignant course is not influenced by any kind of internal medication or local treatment short of complete destruction or removal of every vestige of carcinoma tissue. The prevention and successful treatment of any disease depend on the neutralization or removal of its cause. Material progress in the treatment of carcinoma can only be hoped for after we have succeeded in demonstrating its essential cause.

NON-PARASITIC.

The most intense interest in the study of carcinoma was awakened with the origin and rapid growth of the modern science of bacteriology. As soon as it became known that all inflammatory processes are caused by specific pathogenic micro-organisms it was very natural that, by reasoning from analogy, the conclusion was reached that carcinoma must be a parasitic disease. There are so many similarities between chronic infective diseases, notably tuberculosis and carcinoma, that we can readily appreciate the motives that led to the investigations in all parts of the civilized world concerning the microbic origin of carcinoma. Various methods of tissue staining, cultivation and inoculation experiments have all been utilized by thousands of earnest investigators in their strenuous efforts to discover and prove the essential microbic cause of carcinoma. A number of intracellular and extracellular bodies have been found and described as the specific parasitic cause of carcinoma, but for none of them has the claim been substantiated by crucial impartial laboratory and clinical tests. Searching criticisms from different reliable sources have disarmed all such claims.

From an etiologic standpoint, very little has been added to our knowledge of the nature of carcinoma since the epoch-making researches of Virchow, Cohnheim, Thiersch and Waldeyer. The pathology of carcinoma has been materially advanced by the most painstaking and accurate microscopic work concerning the origin, growth, multiplication and life history of the carcinoma cell and its manner of local and general dissemination. The atypical, irregular mitotic figures which are seen in the segmenting carcinoma cell are in strong contrast with the regular, symmetric, karyokinetic processes observed in direct division in normal tissue cells. The metastatic processes have been traced, step by step, through the lymphatic channels and the systemic circulation, and it has been demonstrated beyond all doubt that the secondary tumors are the direct offspring of migrating carcinoma cells from the primary tumor, and that the pre-existing mature tissues take no active part in the tumor formation, primary or metastatic.

This tends to prove that the histology and histogenesis of carcinoma speak against the parasitic origin of this disease and in favor of a disease of the epithelial cells independent of infection. The mass of tumor tissue, the parenchyma of carcinoma, is invariably made up of epithelial cells in the primary, as well as in all metastatic tumors, regardless of their anatomic location. Inflammatory products, on the other hand, present the same histologic structure independent of their anatomic location or character of the tissue involved. Infective processes are caused by the pathogenic action of micro-organisms on pre-existing tissue, and the inflammatory swelling is made up of the products of effusion and cell migration through the damaged capillary walls plus new tissue cells generated by the pre-existing tissues acted on by the microbic cause of the inflammation.

Carcinoma is a tumor that invariably starts from a matrix of embryonic epithelial cells of prenatal or postnatal origin, and in its growth only epithelial cells take an active part; hence, if its microbic nature should ever be demonstrated, it will be a microbe which has a special predilection for epithelial cells, a very unlikely, exceptional phase in the vast field of bacteriology. The failure to discover the microbic origin of carcinoma, together with the histology and histogenesis of the tumor, speaks strongly against the parasitic origin of the disease. Inoculation experiments have so far only proved the negative side of the question. As an additional proof of the truth of this statement I will mention an experiment which has confirmed me in the belief of the non-parasitic nature of carcinoma.

Author's Experiment.—On May 4, 1901, I inoculated myself with carcinoma tissue immediately after I had completed a radical operation for advanced carcinoma of the lower lip. The patient from whom the malignant graft was obtained was an Irishman, 60 years of age. The submental and submaxillary lymphatic glands were involved. The excised glands were immersed in a warm saline solution, and from one of them a fragment, the size of a split pea, was used for implantation. A small incision was made about the middle of the forearm, over the supinator muscles, under strict aseptic precautions. One of the margins of the skin wound was undermined sufficiently to make a pocket large enough to receive the graft. After implantation of the carcinoma graft the wound was closed with a horsehair suture and iodoform collodium. The carcinomatous nature of the glandular affection was proved by microscopic examination of the gland from which the tissue was taken. In the course of a week a subcutaneous nodule, the size of a pea, made its appearance, which remained stationary for two weeks, when it gradually disappeared. At the present time a faint linear scar remains, indicating the site of the incision. This, as well as a few similar experiments made by Alibert, furnish strong, if not convincing, proof of the non-parasitic nature of carcinoma. The bacteriologic search for the supposed microbic cause of carcinoma will continue in the future, but undoubtedly will be as devoid of positive results as it has been in the past.

INTERNATIONAL CO-OPERATION INVITED.

It seems to me that the time has come when it is necessary, by joint and persistent action, to study the

etiology of carcinoma from other standpoints, and it is for this reason that I have chosen as the subject for my oration "A Plea for the International Study of Carcinoma." The vast importance of this subject merits united systematic efforts, in which representatives of all nations should take a willing active part. It is only by such concerted action that we may expect to reach the final solution concerning the true nature of this strange disease, and in doing so prepare the way for a rational and more successful treatment.

So far as our present knowledge goes, carcinoma must be regarded as a tumor caused by an atypical proliferation of epithelial cells from a matrix of embryonic cells of congenital or postnatal origin. The epithelial proliferation takes place in vascular tissue where epithelial cells are never found in a normal condition. The heterotopic location of these cells distinguishes carcinoma from all benign epithelial tumors. Atypical proliferation of epithelial cells signifies their growth and multiplication in a locality where they have no legitimate citizenship.

The malignancy of carcinoma is due to the fact that the epithelial cells remain in their embryonic state, fail to reach maturity, retain their abnormal vegetative capacity until degeneration sets in, and by virtue of their ameboid movements invade the neighboring tissues, enter the lymphatic channels and finally give rise to regional and general metastasis. It is this abnormal behavior of the epithelial cells, their prodigious vegetative capacity and their migration into all adjacent tissues, irrespective of their histologic structure, that characterizes their life history and intrinsic pathologic tendencies. What are the general influences or local conditions productive of such a morbid erratic cellular life? The disease in its incipiency being local, it would be natural to search for local causes. If this be the case, where do the first textural changes take place? Are they to be found in the epithelial cells or in the tissues in their immediate environment? These are questions that must be answered before the etiology of carcinoma is definitely settled.

FACTORS IN THE ETIOLOGY OF CARCINOMA.

That the general condition of the organism, an aptitude, has some influence in determining the disease there can be no question, but that it is entirely responsible for it is more than doubtful. If a general predisposition were the principal agent in causing the disease, autoinoculation experiments ought to have proved successful. In the case of an inoperable carcinoma of the leg, a few years ago, I implanted subcutaneously fragments of carcinoma tissue from the same patient at two points on the affected limb. A little nodule formed at the seat of inoculation, remained stationary for about two weeks, and then disappeared entirely. The same experiment has been made by several other surgeons, with a similar negative result. The microscope has proved an invaluable aid in the study of the histology and histogenesis of carcinoma, but so far it has been powerless in demonstrating its cause. Future microscopic researches may yield unexpected results, but it appears to me that the time is at hand to extend our inquiries regarding the etiology of carcinoma beyond the confines of laboratories and explore other fields less cultivated in search for its cause or causes. United action on a large scale, embracing enthusiastic investigators of all nations, concerning the influence of heredity, age, race, climate, diet, habits, trauma, prolonged irritation, chronic inflammation, scar tissue and benign tumors in the causation of the disease, could not fail in bringing more light on this perplexing subject.

Heredity.—The influence of heredity in the etiology of carcinoma is unquestionable. Every surgeon of large experience has observed cases in which the disease could be traced through several successive generations. The percentage of cases in which carcinoma has been shown to be hereditary is estimated at from 12 to 33 per cent. by different authors. More extensive and accurate statistics from all available sources are needed to prove the influence of heredity in the etiology of carcinoma. In studying the influence of heredity, it is not fair to exclude from the statistics distant cancerous relatives, as has been done by Cripps and others, because it is well known that congenital deformities, physiognomy and mental peculiarities frequently reappear several generations apart and in distant relatives. There is no reason to doubt that at least a predisposition or aptitude for carcinoma is transmitted in a similar manner.

Age.—It is a familiar fact that advanced age plays an important rôle in the etiology of carcinoma. Of the 9,906 cases collected by De la Camp, there were only 19 less than 20 years of age. I have seen a carcinoma of the mammary gland in a girl, 21 years of age; a carcinoma of the rectum in a boy of 17, and several cases of carcinoma of the stomach in persons between 25 and 30 years of age. There appear to be conditions, local or general, antagonistic to carcinoma during the most active physiologic processes concerned in the growth and development of the body, and the disease manifests a special predilection for the aged when all the active processes in tissue formation are on the decline. Age has also a decided influence on the clinical course of carcinoma, as it is well known that its malignancy diminishes with advancing age. The senile state favors the development of the disease, but exercises an inhibitory influence on its progress, while, on the other hand, the juvenile tissues are antagonistic to it, but when it does occur in young subjects it pursues an unusually malignant course. The influence of age on the prevalence and malignancy of carcinoma merits more careful study in searching for the key that will eventually unlock the mystery of its etiology.

Racial and Social Influences.—It is a well-known fact, confirmed by reliable and extensive statistics, that some races are much more predisposed to carcinoma than others. The black and yellow races are not as susceptible to the disease as the whites. Our North American Indians have been and still are peculiarly exempt from this disease. As a rule, to which there are few exceptions, it may be stated, without fear of contradiction, that the primitive races, as long as they remain true to their original habits, customs and manner of living, seldom suffer from carcinoma; on the other hand, the disease is most prevalent where civilization has reached its climax. This difference in the prevalence of carcinoma among the ignorant and educated, the savage and the highly civilized, is undoubtedly due, to a large extent, to diet, brain rest on one side and a strenuous life, worry and discontent on the other. That the state of the nervous system plays a part in the etiology of carcinoma I am satisfied and have seen it repeatedly demonstrated in my practice. Future statistics based on racial and social influences will bring out many important facts that may forge the connecting link in the long chain of evidence necessary to reach the final aim of etiologic research.

Climate and Topography.—The very unequal geographic distribution of carcinoma over the surface of the earth points to local conditions, climatic, racial and dietetic, which favor or inhibit the development of the disease. Like lepra, carcinoma has its favorite geographic haunts. A careful study of the local conditions where carcinoma is most prevalent should form an important part of future researches relating to the etiology of this disease, and, if done on a large scale by the most competent men in such localities, may lead to important results.

Legrain makes the statement that carcinoma is unknown in Algeria, except as it appears in the European. Behla has made a study of the geographic influences in the causation of carcinoma. According to his observations, it is very rare in the extreme northern and southern countries. It occurs with greatest frequency in the temperate zones of Europe, Asia and America. It is very rare in Central Africa, the South Sea Islands, Central America, and almost unknown in New Guinea. Haviland, in his researches, found the disease in the same latitude most prevalent along river courses and in localities subjected to periodic floods, while it is less frequent in high altitudes and in the spring districts at the river sources. It was a noteworthy fact that geologically the alluvial soil appeared to constitute a local cause, while a chalky or lime soil exercised the opposite effect. Heimann made similar inquiries and came to the same conclusions.

Diet.—For a long time popular belief has accused certain articles of food, such as meats, tomatoes, condiments, as causes of carcinoma. Verneuil and Reclus long ago called attention to the fact that herbivora were much less liable to carcinoma than the carnivora, and they ascribed the great increase in the number of patients suffering from carcinoma that came under their observation during forty years to the increased consumption of meat by the laboring classes. That diet may have some influence as a predisposing influence there can be no doubt, but to assume that it is the sole or even the principal cause of carcinoma would be a position which is not sustained by facts.

During my trip last summer to the very heart of the Arctics to within 650 miles of the North Pole, I made special observations and inquiries in reference to the occurrence of tumors among the aborigines. These people have lived for unknown centuries on an exclusive animal diet, blubber and meat; they do not know the taste of a single article of vegetable diet; they are the filthiest people in the world, as they never wash themselves, and wear fur throughout the entire year, and yet they appear to be immune to tumor formation of any kind. The idea occurred to me that this immunity might be due to the iodin contained in the food obtained from the sea animals.

The North American Indians, who in their primitive state lived largely on an animal diet, were likewise singularly free from tumor formation, more especially carcinoma. The subject of diet as a causative element of carcinoma deserves further and more thorough and systematic investigation.

Habits.—Certain habits appear to be conducive to the occurrence of carcinoma. Habits and occupations which expose certain parts to repeated and prolonged irritation deserve special mention here. I will refer to two only as most striking illustrations, smoking and betel chewing. Justly or unjustly, smoking has been accused for a long time as being a frequent cause of carcinoma of the lower lip, tongue and tonsils. The clay pipe has an unenviable reputation in this respect in cases of carcinoma of the lower lip, and probably deservedly so. It is singular, however, that in many countries where cigarette smoking is practiced to the greatest excess, like Turkey, Palestine, Algeria and Morocco, carcinoma of the lip and mouth is of rare occurrence. The vice of betel chewing, so generally practiced in Ceylon and all through India, is unquestionably responsible for the frequency with which carcinoma of the mucous lining of the mouth is met with in those countries. The principal constituents of "betel" are the betel leaf, areca nut, caustic lime and some sort of a strong condiment, all powerful irritants of the mucous membrane. The disease effects the buccal surface of the cheek, generally commencing opposite the teeth of the lower jaw and spreading with varying rapidity according to the pathologic type of the tumor.

Trauma.—The influence of traumatism in the etiology of carcinoma is variously estimated by different authors. Trauma exercises a more important rôle in the causation of sarcoma than carcinoma. In most cases in which an alleged single trauma has been charged with having caused the disease, the carcinoma was present when the injury was received, the injury having called the patient's or physician's attention to it. Carcinoma seldom, if ever, follows a single injury, but develops more frequently in consequence of

Prolonged Irritation.—Frequently repeated and long-continued irritation is a generally recognized exciting, if not the principal, cause of carcinoma. Certain occupations, habits, malposition and diseases of teeth and displacement of organs due to abnormal sources of irritation must be included under this category as agencies which so often precede carcinoma and which must be regarded at least in the light of determining causes, as without such local harmful action the disease might not have made its appearance. The local irritation effects tissue changes conducive to carcinoma formation in persons who are the subjects of a hereditary or acquired predisposition or aptitude to the disease. It would be well to study more thoroughly and on a larger scale, experimentally and clinically, the effect of chronic irritation on the etiology of carcinoma.

Chronic Inflammation.—While the histologic processes observed in inflammation have nothing in common with carcinoma, clinical observations appear to prove that carcinoma not infrequently develops in an organ or part which is the seat of a chronic inflammation. It is not at all uncommon to find a carcinoma take its starting point in ulcers of the stomach and chronic ulcers of the lower extremities, in tubercular lesions of the skin, and in chronic inflammatory affections of the mucous membrane of the tongue and other organs. Goodhart has called special attention to ichthyosis of the tongue as a cause of carcinoma. It has been well known for a long time that this superficial inflammation of the tongue frequently precedes carcinoma.

Another inflammatory product, very often the starting point of carcinoma, is the wart. Warts on the forehead, cheeks and hands of aged persons, "verruca senilis," most frequently undergo such malignant transition. The inflammatory process is undoubtedly concerned in laying the histologic foundation for carcinoma by causing the penetration of embryonic epithelial cells into the inflammatory product, where they are brought in contact with vascular tissue, which in-

creases their vegetative activity and alters their habits of life.

The influence of chronic inflammatory processes involving the epithelial cells of glandular organs and the surface of the skin and mucous membranes as one of the causes of carcinoma should receive more careful attention than has been devoted to it. Extensive and reliable statistics on this phase of the etiology of carcinoma is what is needed in the further elucidation of this subject.

Scar Tissue.—The origin of carcinoma in scar tissue has been so often observed that German surgeons designate it as "Narbenkrebs." The tumor almost invariably begins as a subepidermal nodule from a matrix of embryonic epithelial cells buried in the mesoblastic tissues during the process of healing by granulation of the injury or lesion which gave rise to the tissue defect.

Trauma, irritation, inflammation and cicatrization as causes of carcinoma undoubtedly play a double rôle in lighting up the disease in persons predisposed to it, as any of them may be the means of transporting the essential tumor elements, epithelial cells, from their normal vascular physiologic habitat into a vascular district and may likewise be concerned in stimulating their vegetative life by diminishing the normal physiologic resistance of the adjacent tissues.

Benign Tumors.—The frequency with which benign epithelial tumors undergo transformation into carcinoma remains a matter of individual opinion and isolated experience. In papilloma and adenoma the epithelial cells which make up the parenchyma of the tumors are not in touch with the blood vessels. Any and all influences, local and general, which are capable of stimulating cell growth beyond the limits observed in benign tumors, and which result in penetration of the membrana propria by embryonic epithelial cells, are the causes on which depends the transition of a benign epithelial tumor into a carcinoma.

Among the local causes which bring about such a malignant transformation may be enumerated trauma, prolonged or repeated irritation, and incomplete removal of the benign tumor by excision or the employment of caustics. Benign tumors on exposed surfaces of the body are most prone to become malignant, because they are most subjected to injuries and irritations which result in histologic changes favorable to the development and growth of carcinoma. From a scientific as well as a practical point of view, it is extremely important that by concerted action more light should be shed on the frequency with which benign epithelial tumors become the starting point of carcinoma and the influences which determine such transition.

CONCLUDING REMARKS.

I have only briefly alluded to a number of the most familiar conditions, influences and lesions which are known to favor the origin and growth of carcinoma, with a view of inciting a more general and concerted interest in the study of the etiology of this disease outside of laboratory methods. Laboratory research will be carried on until the real cause of carcinoma has been discovered, but this method of investigation will receive material, if not essential, aid by a more careful and extended inquiry concerning the relations of what might be designated as some of the exciting or predisposing causes of the true nature of carcinoma.

I would like to see this congress take the initiative for the international study of carcinoma in all its phases, but with special reference to its etiology as influenced by the agencies which I have enumerated. For this purpose a committee should be appointed representing all nations who have sent delegates to this international gathering, and this committee should be requested to report the results of their investigations at the next meeting of the Congress.

I am confident that earnest, united work on such a large scale, representing practically the entire inhabited surface of the earth, would contribute invaluable material for the final discovery of the essential cause of carcinoma. Investigations on such a basis may finally lead to a successful treatment of carcinoma, without resort to the knife, by the employment of remedies which will either destroy the abnormal cells or cause them to reach maturity, either removing the tumor or rendering it stationary.

It is the duty of the medical profession to lend every effort toward accomplishing this object, as the old sentiment ever remains true:

"Salus populi lex suprema est."

SIXTEEN YEARS' EXPERIENCE WITH FORMIC ACID AS A THERAPEUTIC AGENT.*

HEINRICH STERN, M.D.
NEW YORK.

My attention was first drawn to the medicinal qualities of formic acid by a semi-secret preparation styled by its manufacturer, Hensel, "Ferrum formicarum oxidatum oxydulatum." This was in 1888. The same or a similar preparation is now sold by a homeopathic drug house under the name of "Hensel's tonicum."

HISTORICAL REVIEW.

There is no doubt in my mind that Hensel's formic acid compound is a latter-day transformation of Hoffmann's "Vinegar of Magnanimity," in which a preparation of ants played the leading rôle. In the seventeenth century this famous vinegar had found entrance in all European courts and was employed by men and women as a general tonic, stomachic and diuretic, and probably also as an aphrodisiac. For formic acid seems to possess certain qualities stimulating sexual appetite (in South America a species of large ants are consumed), and the proprietary tonics demanding a good sale, as a general rule, are those which increase sexual desire.

Otto Braunfels, a German botanist and physician (1488-1534), to whom Linnæus refers to as "the father of botany," already drew attention to the fact that an acid fume reddening blue vegetable colors emanated from ant hills. Formic acid, however, was first isolated and discovered by J. Wray or Rey in 1670 by distilling red ants with water; others ascribe the first isolation of this substance to Samuel Fischer (1670). Marggraf, in 1749, experimentally proved the dissimilarity of formic and acetic acids. Döbereiner, in 1822, produced formic acid artificially by the oxidation of tartaric acid with manganese dioxid and sulphuric acid thus:

$$\begin{matrix}CH(OH).CO.OH\\ |\\ CH(OH).CO.OH\end{matrix} + MnO_2 + H_2SO_4 = 2H.CO.OH + 2H_2O + 2CO_2.$$

Tartaric acid + Manganese dioxid + Sulphuric acid = Formic acid + Water + Carbon dioxid.

Berzelius and Liebig devoted much time to the minute study of formic acid.

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* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

PREPARATION OF FORMIC ACID.

Formic acid is prepared in different ways. The best mode of obtaining it is by heating equal weights of oxalic acid and glycerin to a temperature of 100 to 110 C. for about fifteen hours, when carbon dioxid is given off and dilute formic acid distils over. The dilute acid may be concentrated by saturating it with lead carbonate or lead oxid, after which the mixture is filtered and evaporated to a small bulk (complete dryness). The dry lead formate, reduced to a fine powder, is then heated in a glass tube connected with a condensing apparatus, through which a current of sulphureted hydrogen is passed. The glycerin apparently exerts no chemical action, but seems to bring about decomposition of oxalic acid at a lower temperature than would otherwise be necessary. At a temperature above 110 C. decomposition of the formic acid would ensue.

The name formic acid is an appropriate one, for, as is well known, the ant, especially the red ant, *Formica rufa,* ejects, when irritated, a secretion, the greater part of which is composed of formic acid. Ants, however, are not the only insects which produce the acid. This substance is produced or accumulated in a special gland from which, by means of the sting, it finds its way under the skin, where it gives rise to a local inflammatory process. Bees impart some of their formic acid to the honey. The acidity is particularly noticeable in fresh honey of wild bees. In domestic medicine, honey at one time was considered to be a good preventive of diphtheria. The formic acid contained in it is said to inhibit the growth of the Klebs-Loeffler bacillus. The diuretic qualities of certain isopoda, like *Armadillo officinalis* and *Oniscus asellus,* have also been ascribed to the formic acid which they contain. Free formic acid is also contained in the leaves of the stinging nettle, *Urtica urens,* and in other plants, and it has been demonstrated in unripe grapes. Being a decomposition product of vegetable débris, it is very likely the potent medicinal constituent of mud baths. The mud bath acts as a local rubefacient.

REVIEW OF LITERATURE.

The effect of formic acid or the formates on the animal organism has not been studied exhaustively. Mitscherlich was the first[1] to bestow more than casual attention on this question. He reported the following:

Rabbits were poisoned with lethal doses of free formic acid. The autopsy revealed pronounced thickening of the outer layer of the gastric mucosa without marked cellular changes; the capillary vessels and veins were engorged and showed extravasation of blood; in short, the lining of the stomach and the upper part of the small intestines was violently inflamed. The dilute acid produced the same effect but, of course, in a less pronounced degree. That the acid was absorbed was evinced by the acid reaction of the urine which in rabbits is normally alkaline. The blood appeared to be little altered. The kidneys were discolored dark red brown, and contained a large amount of blood. The urine exhibited blood and numerous cylindrical bodies. This evinced that formic acid like other acrid substances exerted a specific influence on the kidneys. In this respect they acted in a similar manner to cantharides.

The toxic state due to formic acid, according to Mitscherlich, is different from that due to any of the other acids he had experimented with. The experiment-animals become restless and excited. Asthenia supervenes only after some hours. Death ensues after a period of mild convulsions and difficult respiration.

According to the same author, formic acid is a very violent poison, as half an ounce of a liquid containing in 100 parts 7 parts of the acid caused death after twenty-four hours, and two drams even called forth marked poisonous symptoms. The acid in the same dilution applied on the skin of various individuals caused but a slight burning sensation; the pure acid, on the other hand, gave rise to a severe inflammatory process which only subsided after a number of weeks.

Rabuteau,[2] in experimenting with formic acid and sodium formate, came to different results. He showed that the acid is again eliminated by the urine as a carbonate (combined with alkali), and that it has no deleterious effect on the organism if administered as free diluted acid or if combined with sodium. He took 3.5 gm. of sodium formate without experiencing any undue effects.

Arloing[3] observed the action of sodium formate in dogs and horses, and found that it diminishes cardiac activity and lowers the blood pressure and the temperature. Massive doses, as one gram per kilogram body weight, cause death by cardiac paralysis.

Hoffmann[4] studied the influence of formic acid on the lower organisms. Infusoria became immediately paralyzed in dilutions of the acid down to 0.1 per cent. Their body-contents were rendered dark and granulated and finally the enveloping membrane burst in most organisms. Bursting of the infusoria could not be observed in a 0.01 per cent. solution of the acid, although all other phenomena were still well marked.

A leech put into a beaker containing formic acid in 0.25 per cent. dilution immediately contracts its body and relaxes it again and makes vain attempts to escape from the vessel. Its movements, at first lively, gradually become weaker and after twenty-five minutes the leech is dead. The same phenomena occur in the 0.1 per cent. solution of the acid, but death ensues only after fifty minutes. Placed in a 0.05 per cent. solution of formic acid, the leech immediately fastens itself on the glass and performs moderate movements with the free end of his body. After five minutes it tries to get out of the fluid; again placed in the solution, the animal fastens itself again, renewing at the same time its movements, and attempts to escape. The leech becomes gradually weaker, and after fifty minutes the sucking discs no longer work. The movements cease temporarily while the animal lies on its side contracting its body vehemently. After two hours neither spontaneous nor reactive movements are perceptible. In a 0.01 per cent. solution of the acid the leech apparently was not disturbed, but twenty-four hours after it was found dead at the bottom of the vessel. A leech put for control purposes into a 0.05 per cent. solution of acetic acid fastened itself at once on the wall of the vessel and remained in a quiescent state. The animal was found in the position after twenty-four hours, although means to escape were offered it. In the same dilution formic acid caused the death of the leech in two hours.

Frogs placed in a beaker containing 100 c.c. of a 0.5 per cent. solution of formic acid at once make attempts

1. Mitscherlich: "De acidi acetici, oxalici, tartarici, citrici, formicici et boracici effectu in animalibus observatio," 1845. See also Hoffmann: "Experimentelle Untersuchungen ueber die Wirkung der Ameisensæure, 1884.

2. Abstract from Gaz. med. de Paris, 1871, in Jahresber. ueber die Fortschr. d. Pharmakognosie, Pharmacologie und Toxikologie, 1872.

3. Abstract from Bull. gen. de therapie, 1879, in Jahresber. ueber d. Fortschr. d. Pharmakognosie, etc., 1879. Both quotations after Hoffmann.

4. Hoffmann: Experimentelle Untersuchungen ueber die Wirkung der Ameisensæure, 1884.

to escape; after fifteen minutes the animal suddenly falls on its abdomen, holding its head above the fluid and making violent motions with its hind legs. Soon it becomes unable to rise and its head droops down. The extremities are moderately rigid after twenty-five minutes. This rigidity slowly increases and becomes more general, so that in fifty minutes the animal gives the impression as if it were frozen; an hour and a half after starting the experiment it is lifeless. The blood spectroscopically examined exhibits the bands of oxyhemoglobin. In a 0.5 per cent. solution of acetic acid a frog lived for two hours and a half. In this frog muscular rigidity did not ensue.

Hoffmann also inquired into the antiseptic and antifermentative properties of formic acid. He found that free formic acid in a solution of 1 per cent. prevented even the slightest degree of putrefaction; that a 0.5 per cent. solution averted putrefaction of Buchholtz's nutrient (distilled water 100 c.c., commercial rock candy 10 gm., ammonium tartrate 1 gm., and potassium phosphate 0.5 gm), and that a 0.25 per cent. solution exerted a definite but limited preventive influence on putrefaction. He showed that the conversion of albumin by pepsin and hydrochloric acid is not prevented if as much as 1 per cent. of formic acid is contained in the digestive fluid, and that formic acid can not replace hydrochloric acid in proteid digestion.

Sodium formate inhibits proteid digestion by combining with the hydrochloric acid to form sodium chlorid, setting free thereby formic acid. Fermentation, of course, is also inhibited when the liquid to be fermented contains formic acid in rather large proportion; in greater dilution, however, as demonstrated by the same observer, formic acid exerts a stimulating influence on the process of fermentation. It appears that the activity of the yeast cell is enhanced when high dilutions of formic acid are added to the glucose solution.

The latter observation I am able to corroborate to a certain extent. I found that while in dilution of 1 to 3000 formic acid suppresses the development of bacteria in weakly acid media like beer, and while in dilutions of 1:7000 and 1:10000 the bacteria are rendered more or less inactive; culture, as well as wild yeasts, thrive very well and often times become even more active in these dilutions.[5]

During the last few years a number of investigators (notably French) have studied the antiseptic, antifermentative and clinical possibilities of formic acid. Concerning its antiputrefactive and antifermentative qualities, they have, in substance, not gone far beyond Hoffmann's experiments; concerning its clinical value they have said nothing. We owe thanks, however, to the French clinicians for having resuscitated from oblivion this very potent remedial agent.

The effect of formic acid on the healthy human organism as studied by me is as follows: In doses of two drops, well diluted, it gives rise to no symptoms besides an occasional irritation in the throat and a feeling of warmth and emptiness in the stomach. In doses of five drops it causes a slight irritation in the pharynx and larynx; in 10-drop doses it exerts mild diuretic and diaphoretic influence; in 20-drop doses it produces the same phenomenon, but in a more pronounced degree and gives rise to contracting sensations in the pyloric region when the stomach is empty. Administered to the amount of from 3 to 4 c.c., very well diluted, and when the stomach is empty, it causes dryness in the throat, ringing in the ears, slight vertigo, burning sensation in the gastric organ and sometimes mild pyloric spasms, lassitude, slight motor disturbances and elevation of temperature of from one-half to two degrees, which latter is followed after half an hour or an hour by marked perspiration and increased micturition. In doses of 0.5 to 1 c.c., repeated three or four times a day for some weeks, it acts as a muscular excitant in some instances. Clement[6] states that formic acid augments muscular force, activity and resistance. By its action on the muscular structure of the bladder it facilitates emission of the urine and enhances the contractility of the muscles of the larynx.

There is no authentic case of fatal formic-acid poisoning on record. In very massive doses as recommended by Clement (2 to 3 gm. a few times during the day), we find not infrequently toxic symptoms, as vertigo, nausea and vomiting, albuminuria, hematuria, vesical tenesmus, dyspnea and lowered temperature. According to Lewin,[7] 1 gr. of sodium formate per kilogram of animal weight is a lethal dose.

THERAPEUTICS OF FORMIC ACID.

The therapeutics of formic acid are manifold, but indefinite. It has been employed, as we have already seen, in a similar way as cantharides to increase sexual desire. At present the people of Paris, as I have learned from a trustworthy source, are again beginning to utilize it for the same purpose. Formic acid has been turned to practical account—in years gone-by especially—in the treatment of atonic conditions of the urinary organs, vesical weakness, dropsy, paralysis and gouty and rheumatic affections, in general when a stimulant of the mucous membranes or a diaphoretic and diuretic agent was indicated.

It was often used as an external remedy, especially in the form of the *Spiritus formicarum*. This is prepared by mixing four parts of formic acid, seventy parts of alcohol and twenty-six parts of water. Topically this was employed alone or with other rubefacients, as compound spirit of angelica, spirits of camphor, etc. Internally it was prescribed in doses of from 0.5 to 2.0 c.c. several times a day. Popular medicine made use of the ants and of formic acid. Placed in little linen bags and crushed therein, the ants were pressed against the portion of the body affected with paralysis, neuralgia, gout or rheumatism, or their juice was employed by rubbing it directly into the diseased joint or muscle. At other times the ants were used for local or general baths or for inhalation (diseases of the respiratory organs) or finally in the form of fomentations. The Russian peasant prepares his ant bath in the following way: Finding an ant's nest, he puts into a linen bag the ants, their eggs and necessarily considerable dirt. Returning to his home, he plunges his bag of ants, which he has previously fastened tightly at the mouth, into the hot water of the bath. After several minutes the water gives off a very strong penetrating odor of formic acid. The bath is now ready and the invalid is put

5. Formaldehyd is partially oxidized to formic acid in the organism and excreted as such by the urine. I have repeatedly observed that the urine of diabetic patients, when these had taken urinary antiseptics (so-called) which liberate formaldehyd and consequently formic acid, had no inhibiting influence on distiller's yeast which was added in order to perform the fermentation test for urinary glucose. Again, Effront, of Brussels, has lately demonstrated that yeast which has become accustomed to gradually increased amount of formol, is capable of decomposing the latter even before it attacks maltose or glucose contained in the liquid.

6. Lyon Medical, Feb. 26, 1905.

7. Lehrbuch der Toxikologie, 1897.

into it. In certain diseases of the respiratory organs the fumes emanating from the decoction are inhaled by the patient.

Looking over the field of formic-acid therapeutics we find that it was and still is chiefly employed as an epispastic. It has been generally utilized on account of its vesicatory, rubefacient and irritating qualities and not on account of a well-defined chemical or constitutional action. Its employment even as an aphrodisiac or as a diuretic must be ascribed to its irritating influence. Applied to a paralyzed limb or to a rheumatic joint, its beneficial influence is solely due to its power of exciting the circulation and setting up a somewhat enduring counter-irritation. Hypodermic injection of the dilute acid into limbs affected with rheumatic conditions as practiced by Couch[8] may effect beneficial results by reason of its antiseptic qualities if a septic state underlies the local manifestation. In the majority of instances, however, it is the epispastic property of this substance which brings about an amelioration of the painful condition.

My experience with formic acid as a therapeutic agent has been obtained by its internal administration mostly, or at least in conditions in which its rubefacient qualities seemed to play an unimportant or secondary rôle. Besides using this remedy in a variety of other affections, I have tested its therapeutic efficacy in a comparatively large number of cases of gout, acute articular rheumatism, muscular pain, cancer, diphtheria, intestinal toxicoses, syphilis and phthisis.

Gout.—Internally administered in doses of from two to ten drops, formic acid does not seem to reduce the gouty state. Employed hypodermically (not in the lesion itself) in from 0.5 to 1.5 c.c. of a 2 per cent. solution, it proved equally ineffective even when it was injected three times daily for from three to five consecutive days.

Acute Articular Rheumatism.—Administered alone internally, formic acid in my hands proved of no avail in ameliorating rheumatic fever. The same must be said of its hypodermic introduction when injected into non-affected parts for eventual constitutional effects. Combined with citric acid, however, as in the following formula, I have employed it with a certain degree of satisfaction, although its efficacy can not be compared with that of sodium salicylate:

℞ Acidi formici
Acidi citrici, āā ..... 5 parts
Glycerini ..... 40 parts
Tinct. cardamoni ..... 1 part
Aquæ ..... 49 parts
M. Sig.: Teaspoonful doses every two to four hours.

Muscular Pain.—Muscular pain of vague character which ceases when an ointment of salicylic acid and methyl salicylate or dry hot air is applied is not relieved by the internal continued administration of formic acid in the usual doses.

Cancer.—The internal administration of formic acid has certainly averted a quick fatal issue in a number of inoperable cases of cancer. In such cases I have usually given it in essence of pepsin which makes an excellent vehicle for its administration. A saturated formic-acid-iodin solution (about 0.5 gram iodin in 60 c.c. formic acid) has given similar results, either when administered by the mouth or hypodermically. Injected in and around the edges of the cancerous tumor (epithelioma, etc.), the iodin-formic-acid solution has given very gratifying results to some of my surgical colleagues in New York (Dr. Daniel Lewis, the late Dr. Thomas H. Manley). The advent of Roentgen-ray therapy by which similarly located cancerous growths are successfully treated prompted us to discontinue our experiments in this particular field.

Diphtheria.—Before the days of the diphtheria antitoxin I used nothing but formic acid, both locally and internally, in the treatment of diphtheritic affections. I do not remember having lost a single case of diphtheria so treated. Internally in this condition I usually gave formic acid in drop doses well diluted in water, with the occasional addition of some whisky. This dose was repeated every one, two or three hours according to the severity of the attack. When the disease was well under control the medication was continued three times a day for from four to eight days. Locally, that is to the faucial mucosa or to any other affected area of the mucous membrane, a 5 per cent. formic-acid-glycerin solution was at once applied and this was followed by swabbing with a 1 or 2 per cent. glycerin solution every few hours. To prevent the spreading of diphtheria in a family I employed locally the 1 per cent. glycerin solution, which was applied once daily to the nares and three times a day to the fauces of the healthy members.

Intestinal Toxicoses.—In toxicoses of supposedly intestinal origin I have made use of formic acid very frequently. I have already dwelt on this point.[9] Formic acid exerts a distinct antidotal value in certain forms of enterotoxicosis and even autotoxicosis. It may be taken before or after removal of the gastric and colonic contents in doses of from two to five drops, well diluted, every hour. Besides its pronounced antiseptic qualities, which it has no occasion to exhibit in genuine intrabiontic toxicosis, formic acid undoubtedly exerts a specific influence on the enteric secretion, a property which sodium formate and the other formates, ingested as such, do not seem to possess.

Syphilis.—In the secondary and tertiary stages of syphilis the iodin-formic acid solution, internally administered, has been well borne in most of the instances in which I employed it, and has been productive of splendid results in almost every case. It does not, as a rule, call forth the same degree of depression of the nervous system as potassium iodid, neither does it occasion muscular asthenia or lowered tone of the heart, which will invariably follow the prolonged administration of iodin or any of its therapeutically active salts.

The iodin-formic acid solution, which some of my chemical and medical colleagues have styled "Stern's solution," for the treatment of syphilitic manifestations is best prescribed in gradually increasing doses and in a menstruum like essence of pepsin. I had a patient who took as much as 3 c.c. of the solution three times a day. Such large doses, however, are hardly called for and may prove injurious to the gastrointestinal mucosa. Applied locally in syphilitic (and gonorrheal) rheumatism, so-called, some of the iodin, probably on account of the vesicatory action of the formic acid, penetrates into the deeper structures, frequently affording relief of the symptoms. The local application, undiluted, is rather a painful expedient and the diluted solution is of but little, if any, therapeutic value. Hypodermically administered, it will improve the symptoms in a comparatively short time. Still, for obvious reasons, I would

8. Medical Record, June 24, 1905.

9. Medical Standard, September, 1904.

prefer the internal administration of this remedy. The solution is especially indicated in the treatment of the syphilitic manifestations of the nervous system, preeminently in those conditions which are the result of syphilitic nodes or gummata.

Pulmonary Phthisis.—Formic acid, and more particularly the iodin-formic acid solution, which must be prepared without heating, as the latter would cause decomposition of the formic acid, in my hands has proved the most valuable medicinal agent thus far advanced for the treatment and cure of—let me call it by the old names—chronic ulcerative and chronic fibrous phthisis. It would lead me too far to state on this occasion my experience with these medicinal agents in detail. A more thorough study of the subject will be published in a separate article in the near future. I only wish to state that I have employed it in the treatment of pulmonary phthisis ever since the monumental tuberculin failure, both in private and hospital practice, in more than 800 cases.

Of course, neither formic acid nor the iodin solution, which latter I have used exclusively in phthisis in the last ten years, is an infallible remedy in this affection. If this were the case I would have given to the world my experience with the drug long ago. I am sorry to say that the solution did not cure all of these 800 patients, neither do I wish to maintain at the present moment that it is even a rational remedial agent in the treatment of phthisis, but I wish to state that thus far it is the only drug which has given me positive results, that is, in improving or curing the condition in over 70 per cent. of all of my cases.

It is certainly a much more rational agent than creosote and its preparations and all other symptomatic makeshifts, including rest cure, open air and dietary treatment, devised to this day for the amelioration of this, the most common of all the chronic pathologic conditions.

DISCUSSION.

DR. W. C. ABBOTT, Chicago, asked: Taking formic acid as a remedial agent, what does it do physiologically? Clinically, he said, the result has been demonstrated, but he asked how the result is obtained.

DR. W. F. WAUGH, Chicago, called attention to the fact that formic acid has been said to stimulate the growth of plants, so much so that it has been alleged that the Hindoo fakir who shows a plant growing before one's eyes employs an earth that contains formic acid. If this be true, Dr. Waugh said that it would be exceedingly interesting to know whether or not formic acid stimulates any of the tissues or organs of the body, or its cells, so as to increase their power of resisting noxious agents such as tubercle bacilli, or the possible germ of cancer.

DR. H. STERN, New York, said that he had tried to give all the real pharmacodynamics of formic acid and that he did not succeed because formic acid is produced constantly in the human body, as it is one of the members of the fatty acid series found in every organism, healthy or diseased. When formic acid as such is taken by the mouth it combines to form sodium formate in the stomach, but it is again excreted as formic acid, provided it is taken in medicinal doses. Therefore, there is a double conversion, into sodium formate and then back into formic acid. Dr. Stern said he does not know how it acts. Whether or not it exerts a specific action on the tubercle he does not know, but in combination with iodin, he said, it has healing virtues and facilitates the production of fibrous tissue. In other words, in most of the patients who have taken the iodin preparation a chronic fibrosis has been produced.

A PRACTICAL METHOD OF ABOLISHING THE CAUSE OF ONE-QUARTER OF THE UNNECESSARY BLINDNESS IN THE UNITED STATES.

F. PARK LEWIS, M.D.

President New York State Commission for Improving the Condition of the Blind, 1903-1904.

BUFFALO, N. Y.

When an enlightened, civilized and progressive nation quietly and passively, year after year, permits a multitude of its people unnecessarily to become blind, and more especially when one-quarter of these are infants, the reason for such a startling condition of affairs demands explanation. That such is the fact practically all reliable ophthalmologists agree.

From a summary of carefully tabulated statistics it has been demonstrated that at least four-tenths of all existing blindness might have been avoided had proper preventative or curative measures been employed, while one-quarter of this, or one-tenth of the whole, is due to ophthalmia neonatorum, an infectious, preventable and almost absolutely curable disease. Perhaps this statement will take on a new meaning when it is added that there are in the State of New York alone more than six thousand and in the United States more than fifty thousand blind people; of these, six hundred in the one state and five thousand in the country would have been saved from lives of darkness and unhappiness, in having lost all the joys that come through sight, and of more or less complete dependence, for no individual can be as self-sufficient without as with eyes—if a simple, safe and easily applied precautionary measure had been taken at the right time and in the right way to prevent this affliction. The following three vital facts are not questioned, but are universally accepted by those qualified to know:

1. The ophthalmia of infancy is an infectious germ disease.

2. By the instillation of a silver salt in the eyes of a new-born infant the disease is prevented from developing in all but an exceedingly small number of the cases in which it would otherwise have appeared.

3. In practically all those few exceptional cases the disease is absolutely curable if like treatment is employed at a sufficiently early period.

Since these facts are no longer subjects of discussion, but are universally accepted by all educated medical men, the natural inquiry follows: Why, as a commonsense proposition, are not these simple, harmless, preventive measures invariably employed, and why, in consequence of this neglect, does a nation sit quietly and indifferently by, making no attempt to prevent this enormous and needless waste of human eyes?

The reasons are threefold and lie, first, with the medical profession; second, with the lay public; third, with the state.

The medical profession, great as have been its advances during recent years and strenuous as have been the efforts of its teachers and leaders to promulgate the fundamental importance of germs in disease, is by no means yet universally familiar with the facts concerning infantile ophthalmia, as to its prevalence, its dangers, its prevention and the measures that may be successfully instituted for its treatment. While the total number of cases is large, the disease may occur very rarely in the experience of any individual physician, even though he may have had an extensive general practice. When it does occur, unless the physician is fully informed, he

does not anticipate it and is unprepared to meet it. He thinks, in many cases, if his attention is called to the baby's eyes, as, indeed, it may not be at all, that the redness and watering is caused by a trifling catarrhal conjunctivitis, and prescribes some simple collyrium or external wash for the lids. He may not see the child again for a week, when perhaps the disease is fully developed, the cornea broken down and irreparable damage done; or, as sometimes happens, he does not know of the special value of the silver salts or fears to employ them because of their possible danger to the delicate eye of the child, and prevention is omitted and correct treatment neglected. It has been shown that the larger proportion of cases of blindness resulting from infantile ophthalmia occurs in the more remote country districts where the parturient patient is infrequently seen and where preventive measures are most imperative. It may not seem possible to the progressive up-to-date practitioner that many physicians are not familiar with this common disease, but the large number of cases of infantile ophthalmia that are constantly occurring, with the clinical histories accompanying them, together with the immense number of blind eyes as a direct sequence, prove beyond question that this is a fact.

The second reason for this apparent indifference lies with the lay public. The young mother has no conception of the danger which an inflammation of the eyes means to her baby. She has probably never heard that such a condition can threaten an infant's eyes. It is but one of the many new problems which maternity has for her, and only when the truth is told to her that the child, in whom all her hopes had been centered, is hopelessly, irrecoverably blind, does she begin to realize the extent of this frightful affliction. If she chance to learn, as she may, that this calamity was a needless one and might have been avoided by simple precautionary measures which were not taken, to her anguish is added indignation and censure of the physician by whom she considers her trust to have been betrayed.

The third agent concerned is the commonwealth. The loss of sight on the part of an infant makes the individual a state care in some measure for life. For the education of its blind children annually New York alone pays per capita at least three hundred and fifty dollars and a yearly gross sum amounting to much more than one hundred thousand dollars. If, as sometimes, happens, the blind citizen is a dependent throughout a long life, the cost of maintenance is not less than ten thousand dollars, and the mere cost in money will be multiplied many times in that a productive factor, in reason of blindness, has been removed from the community.

If, therefore, as an economic proposition, it were realized how vitally it concerns the state that not one child shall needlessly become blind, thereby increasing the public financial burden, there is no doubt that early and effective measures would be instituted to protect the state from this unnecessary and extravagant expenditure of public funds.

It would seem that there are but two reasons why a generally recognized and effective measure for the prevention of a widespread and common cause of blindness is not invariably employed: First, because the dangers of the disease and the value of prevention are not universally known, and, second, because a safe, sterile, simple and free preparation in which the profession and the public have absolute confidence is not always at hand when needed. Concerning the first, various sporadic efforts have been made to inform midwives, who in large cities preside over half at least of the births, of the dangers of sore eyes in the new-born, and eleven states have passed legislative enactments requiring that the midwife shall report each case to the proper health authority and affixing a penalty for the failure to do so. As has been intimated, however, it is not by any means always under the ministration of midwives that these cases occur, and, like all laws behind which is not a strong and well-informed public sentiment, this law is rarely enforced. A more effective method must be devised. Every physician having to do with the parturient woman, every obstetrician, every midwife, must be frequently and constantly advised of the dangers and possibilities of this disease, the necessity of prevention and the value of early and correct treatment. They must then have placed in their hands ready for instant use a safe and efficient preparation issued by the health authorities as a guarantee as to its quality and efficiency.

An important step was taken in this direction when a resolution was passed by the House of Delegates, at the annual meeting of the New York State Medical Society, requesting the various health officers of the state to include ophthalmia neonatorum among contagious diseases which must be reported to the local boards of health.

This is, indeed, only a beginning; not only should every case be reported, but the conditions of each eye should be described in the report and accurate records made as to the result. If, then, the sight in one or both eyes is lost, inquiry as to the reason should be instituted. The assurance that such an investigation will certainly follow will inevitably cause a degree of care to be exercised that will immediately lessen the number of cases of blindness due to this cause.

The second essential in order that the cause of infantile ophthalmia be abolished is that a solution of the necessary silver salt be prepared under the authority of some body capable of inspiring universal confidence and that it be distributed by the health department of every state gratuitously to every obstetrician, physician or midwife qualified to care for the parturient woman. The nature of the solution, together with the character of the descriptive card which should accompany it, should be determined by a committee chosen by the President of the American Medical Association and should have among its members at least one representative ophthalmologist, one obstetrician and one sanitarian. The conclusions of this committee should be reported back to the House of Delegates so that the preparation and its text should carry with it, on the great authority of this association, the assurance that the solution is entirely safe and necessary and that its use should invariably be part of the toilet of every newborn child. The solution, probably silver nitrate, could be put up either by the state itself or by some trustworthy pharmacist at an insignificant cost; its purity and sterility should be vouched for by the board of health of the state. It should be enclosed in specially prepared receptacles, each containing a special quantity and so arranged that it may be used drop by drop. These, properly enclosed, accompanied by a brief lucid explanation of the danger of the disease, the necessity of this germicide, the method of its employment, and the right subsequent care of the eyes should be sent to the obstetrician on the receipt of each birth certificate. As with antitoxin, these preventive packages should be placed at various stations where they could be easily ob-

tained, and those by whom they might be used should be urged to secure them. In order that none who should use them should fail to get them, they should be supplied free of cost. Such further supplies as might be needed for further treatment in the proportionally few cases in which prevention did not prove wholly effective should be made readily obtainable at minimum cost. In other words, every facility should be afforded for the early destruction of the infectious germs.

Similar cards should be posted in every maternity hospital and ophthalmic dispensary, and efforts should be made to have the Credé method of prevention by the use of silver nitrate regularly employed as a routine measure in every public and private institution in which children are born.

Special cards should be sent to midwives, giving them more detailed instructions in several languages. These cards should be in the form of return postals, having space for the date on which the ophthalmia appeared, the condition of the cornea, and whether or not preventive measures were employed.

The distribution of these cards should lie with the public health authorities, and the failure to report promptly should constitute a misdemeanor.

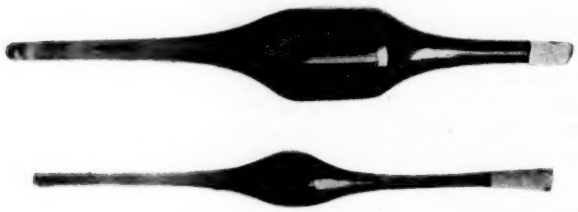

Fig. 1.—Sample light-proof hermetically sealed ampoules for the distribution of the silver; made in different sizes. The glass tips are to be broken off, the rubber tubing being retained to prevent injury of the eye by untrained or careless hands.

On the filing of each birth certificate the department of health should at once send to the accoucheur an ophthalmia card, with a supply of silver nitrate for immediate use. It would probably, by reason of delay on the part of physician or midwife, be delivered too late for that particular case. Each card, sent, however, would be a constant reminder and the preparation would be on hand to be employed when the next case occurred.

Correspondence with some of the principal pharmacists has shown that the nitrate, which is the most efficient of the silver salts, is also the most permanent. It can be prepared in light-proof ampoules so arranged that a sterile preparation may be easily and safely employed even by inexperienced hands. Such a filled receptacle can be prepared and placed in the hands of the health officers and distributed at a nominal cost. If, however, the sum required to put this valuable preventive in the hands of every accoucheur was much greater than it is, it could still be done with great economy to the state.

In the year 1901-2 there were 129 pupils in the New York State School for the Blind; of these the ophthalmic examiner reported 43 as having lost their sight through suppurative ophthalmia. The next year, among 29 new pupils, 11 were catalogued as blind from this cause. In 1903-4, among 24 new pupils, 6 came in the same list, and in 1904-5, of the 23 new pupils, 7 were also so described. A careful re-examination developed the fact that, while all those cases were due to suppurative infections, and, therefore, almost if not all preventable or curable, some of them occurred later than in infancy, but several ophthamologists agreed that it was quite within the facts to say that 25 per cent. of the pupils in the school had lost their sight as a result of ophthalmia neonatorum. If a like proportion exists in the school in New York City, as is quite probable, these, together with the large number receiving state and city aid through other channels, would easily make an annually increasing budget of now not less than twenty-five thousand dollars paid for the education and maintenance of blind people who, had a tithe of that money been expended for prevention, need never have been blind.

In the city of Buffalo in 1905 there occurred about nine thousand births. During the year four children from the same place were newly entered in the State School for the Blind. Of these one boy had lost his sight through ophthalmia neonatorum. The cost of the maintenance of that one child by the state will far exceed the amount which would have been required to protect the eyes of the entire nine thousand.

As we leave the cities the proportion of children blind from this cause entered throughout the state multiplies prodigiously. There can be no question, therefore, as to the economy on the part of the state in instituting general preventive measures. The cost would be infinitesimal, the benefit prodigious, immeasurable. The present time is peculiarly propitious for the successful execution of such a plan.

I have said that responsibility for the indifference that is annually resulting in such frightful disaster lies primarily with the state, the public and the medical profession.

The state is already aroused to the necessity of taking effective measures to wipe out this controllable plague. Bills have been introduced in the legislature of Massachusetts and of New York providing for the appointment of commissions for the blind, one of whose duties will be to study the causes of unnecessary blindness and to suggest preventive measures.

The public has been awakened and a society for the Improvement of the Condition of the Blind and the Prevention of Blindness has been organized in New York under the distinguished direction of Dr. Lyman Abbott and having on its directorate the names of many eminent citizens. The more generally to popularize its work a meeting, at which Mark Twain will preside and the Hon. Joseph H. Choate be the chief speaker, will be held at the Waldorf-Astoria, New York, in the present month.

To make these efforts more effective, the hearty cooperation of the medical profession is essential. The magnificent organization of the American Medical Association makes possible as never before an effective movement to abolish ophthalmia neonatorum as a cause of blindness. Let registration of every case be first secured through the health boards of every state in the Union, then through these same boards have placed gratuitously in the hands of every accoucheur the simple remedy through which protection can be secured, and multitudes whose lives through needless blindness would otherwise result in hopeless failure and untold misery may be saved to their families and the state through the combined efforts of the state, the people and the medical profession. This great thing can be done quickly and effectively. The state and the people are ready. The

third, the most powerful element, is the medical profession. Such a happy combination of conditions may never again recur. May not the powerful influence of this Association at this opportune moment be invoked?

PSYCHOSES RESULTING FROM COAL GAS ASPHYXIATION.*

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For the past ten years at least, reports of cases of psychoses from coal gas poisoning are few. They are frequent enough, however, to demonstrate an apparent relation of cause and effect.

Greidenberg[1] reports 3 cases. The first patient, a woman of 58, whose symptoms were headache, vomiting, apathy, refusal of food, dysentery and, finally, death. The symptoms were thought to be of such a nature as to warrant a diagnosis of acute dementia. The second patient was also a woman who did not actually lose consciousness, the most prominent symptom being whining, apathy and weakness of memory. Recovery supervened after four months. The third was the case of a man of 45 who, in earlier life, had been intemperate. Ten days after asphyxiation he became forgetful, rambling, restless, excitable, sleepless and apathetic. His articulation was indistinct; he gave incorrect answers to simple questions and made incorrect statements. Urine and feces were passed in bed from inattention and there was hemiparesis. The term pseudoparalytic dementia was applied to this case.

Agostini[2] reports two cases with permanent retrograde amnesia. Hedren[3] reports a case in which the patient felt well for a short time after recovery from the acute symptoms. Then followed headache, pains in the extremities, peevishness, weakness of memory, staggering gait, incontinence of urine, complete apathy, muscular rigidity, exaggeration of the knee jerks, fibrillary spasm of muscles and, finally, death from bronchopneumonia.

The following changes were found in the nervous system:

1. Numerous small hemorrhages in the pia of the brain and in the cord.

2. Small bloodless patches throughout the whole cord, in some of which actual softening had taken place.

3. Thrombi in the small vessels of the optic thalamus.

4. Fatty degeneration of the endothelium of the small vessels of the central nervous system.

5. Chromalytic and atrophic changes in the large motor cells of the cord.

6. Partial thickening of the pia of the brain.

7. Degenerative changes throughout the nervous system.

Sibelius[4] reports a case of severe poisoning followed by dementia, paresis, visceral disturbance and death, in which the postmortem findings were similar to those reported in the preceding case. In fact, I find much similarity of the findings in most postmortem reports.

Patient.—S. E., aged 34, single, was admitted to the Kenilworth Sanitarium April 6, 1905. Patient was a real estate dealer, of correct habits. His family history was negative and previous health good.

History.—Nov. 7 patient was found at 7:30 a. m. in a sitting posture leaning against the wall near a gas stove from which gas was freely escaping. He was accustomed to prepare a light breakfast in his rooms and he was evidently so engaged when overcome.

When discovered he was unconscious, the face a deep purple, and the body entirely flaccid. He was picked up and carried to a bed in a nearby room when a general and intense tonic spasm set in which lasted several hours. By the diligent use of active restorative measures, including free inhalation of oxygen, he regained consciousness at the end of three days, and in three weeks he was able to be up and about. His pulse was about 140 and he suffered from dyspnea on slight exertion. His face continued purple and his expression dull and stolid. He complained of no pain, ate enough with slight urging, and slept well. The friends who accompanied him said that his bodily and mental symptoms on admission to the sanitarium were essentially the same as they had been prior to that time.

Examination.—On examination the following notes were made: Height, scarcely five feet; weight, 147 pounds. No abnormalities could be discovered in the viscera and careful examination of the urine was negative. Analysis of the blood showed: Percentage hemoglobin, 80; number of red cells per c.mm., 5,224,000; percentage of red cells, 104.48; corpuscle hemoglobin index, 70.7; number of white cells per c.mm., 14,200; polymorphonuclears, 82; large mononuclears, 4; small mononuclears, 15; eosinophiles, 1.

Vision was good in the right eye and the pupil reacted to light and accommodation. The left was injured by an accident in childhood and rendered useless. The fundus was not examined. Motion, sensation, superficial and deep reflexes, gait and station presented no variations worthy of note. The pulse varied from 108 to 140 throughout his residence at the sanitarium; nearly always over 120. The temperature was normal. The appetite, sleep and condition of the bowels were satisfactory.

Further History.—He had no recollection of anything that transpired for from thirty-six to forty-eight hours prior to the time when he was discovered in his room, though it is known he was at the baths in the Palmer House in the evening of Nov. 6.

He recognized his old acquaintances and repeated their names and discussed correctly with them various matters relating to a period prior to the asphyxiation. He repeated incidents of early life and childhood usually well, but retained practically nothing since the afternoon of Nov. 6. He could not remember what took place from hour to hour, even the visit of an old friend whom he was very glad to see. By dint of constant practice he finally remembered the name of his nurse and his way to the toilet and dining rooms. He could read and make simple computations in arithmetic. He realized his disability and wanted to recover, but was not emotional or complaining. He would read the newspaper, but could not discuss current topics. Though he retained some few impressions in his memory enabling him to find his way about the house and when out walking, there was no material improvement while under my observation, a period of fourteen weeks.

After leaving the institution he returned to the care of Dr. Upton, who reports no notable change either in the bodily or mental symptoms, till about two weeks prior to Dec. 31, 1905, when he died. He began to suffer from severe attacks of dyspnea so that he had to be under constant observation. He was more comfortable for two days before his death, which occurred suddenly, soon after he had retired, and while alone in his room. The bedding was not disordered in a way to suggest any sign of a struggle. The autopsy showed no significant macroscopic changes in the brain or cord, and unfortunately

* Read at a meeting of the Chicago Neurological Society.

1. Greidenberg: "Ueber Psychosen nach Kohlenoxydgas-Vergiftung." Vratsch. No. 48. (Russisch) 1898.

2. Agostini: "Sui disturbi psichici e sulle alterazioni degli elementi della cortezzia cerebrale nell'avellenamento acuto e croncio per ossido di carbonio." Vortrag, gehalten auf d. 10 ital Psychiater-Congress. Riv. speriment di Freniatr., 1899, vol. xxv, pp. 3 and 4.

3. Hedren, Gunnar: "Zur Kenntniss der nervosen Nervenkrankheiten bei akuter Kohlenoxydvergiftung nebst einigen Bemerkungen über ihre forensische Bedeutung." Wien. Med. Blatter, No. 14, and Nord. Med. Arch. Inn. Med., Part 2, No. 4, pp. 1 to 30.

4. Sibelius, Chr.: "Zur Kenntniss der Gehirnerkrankungen nach Kohlenoxydvergiftung." Zeitft. f. klin. Med., vol. xlix, p. 111.

the parts were not preserved for microscopic examination. The lungs were markedly emphysematous, the heart considerably dilated, and there was a cyst of the left suprarenal capsule the size of a large walnut.

It might reasonably be assumed that some deleterious influence not demonstrable by present methods of examination had been exerted on certain of the cerebral neurons so that they were no longer able to retain new impressions as before, and, indeed, the impressions made on them some hours prior to the action of this influence were effaced by it, while impressions of longer standing were not dislodged nor their relationship with each other interrupted. This hypothesis appears more rational than to assume that such multiple capillary hemorrhages or thrombi as have frequently been found postmortem scattered at random throughout the brain and cord might have been accountable for the peculiar mental symptoms. Similarly the tachycardia might be explained by assuming an interference with the nutrition of the neurons which naturally regulate the heart's action.

It would be quite difficult to determine to just what extent the mind was affected as a whole, but no doubt there was some sensible impairment. I have been unable to find in the literature any autopsy report of cases in which retrograde amnesia had been a prominent symptom, and hence regret the brain and cord in this case were not preserved for microscopic study, though, as already suggested, my expectation that such examination would shed very much light on the subject at the present time would not have been very sanguine. The work would have been in the line of progress.

The existence of retrograde amnesia, its intimate causes and medicolegal aspects have been discussed by Wagner,[5] Möbius[6] and others. The peculiar brain changes which give rise to the phenomenon are not at present demonstrable, but that the phenomenon actually occurs under certain conditions the foregoing case pretty plainly shows. Hence its possible importance in medicolegal relations is obvious. For instance, two people might be found together in a state of asphyxiation, one of whom might die without recovering consciousness, the other might recover and actually have no recollection of anything that transpired for a number of hours prior to the period when he was overcome, though circumstances might make it appear probable that he wished to conceal facts within his knowledge covering that time. Instances of retrograde amnesia have been recorded after strangulation from suicidal attempts by hanging. Some authorities claim that only those cases in which severe convulsions were produced were followed by this result.

So far a careful study of the conditions which give rise to the phenomenon is much more valuable than scientific speculation as to the actual changes in the nervous system which produce it.[7]

100 State Street.

5. Wagner, Juolus: Wien Jahrb. f. Psych., 1899, vol. viii, p. 313.

6. Möbius, P. J.: "Neurologische Beiträg.," vol. i, No. —, p. 55, Leipzig, 1894.

7. Bloch, Ernst: "Ein zur Heilung gekommener Fall von Kohlenoxydgasgiftung mit ausschliesslich psychischen Storungen. Fortschr. d. Medicin, 1902, No. 16, p. 525. Bolton: Coal gas poisoning followed by symptoms simulating rabies. The Lancet, 1898, March 19. Federici, F.: "Contributo allo studio delle alterazioni degli elementi, nervosi centrali e periferici consecutive all'avvelenamento subacuto e cronico per CO." Rivista di patologia nervosa e mentale, 1903, vol. viii, No. 3. Schaffer, Emil: "Beiträg zur pathologschen Anatomie der Kohlenoxydvergiftung." Wien. klin-therapeut. Wochft., 1903, No. 43, p. 1227.

MALARIAL INFECTION IN CERTAIN NATIVE VILLAGES OF THE CANAL ZONE.

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PANAMA.

(*Concluded from page 1154.*)

III. MALARIAL PARASITES AND SPECIES OF MOSQUITOES.

The greatest confusion still attends the classification of the malarial parasites. I follow the terminology which seems most closely to conform to the rules of zoological nomenclature. Schaudinn[1] outlines the terminology which at the present time seems to be the most generally accepted one:

Plasmodium malariæ (Laveran), the quartan parasite.

Plasmodium vivax (Grassi and Feletti), the tertian parasite.

Plasmodium immaculatum (Grassi and Feletti), the estivo-autumnal parasite.

At the same time it is much more convenient for the sake of brevity and clearness to refer to the organisms described in this paper by their clinical manifestations, and the terms tertian, quartan and estivo-autumnal will be used, bearing in mind that these terms, although in a way unscientific, are distinctive and explicit.

Before describing the parasites in detail it may be well to say a few words about the general differential diagnosis between tertian and estivo-autumnal parasites. Every one who has worked with malarial blood will acknowledge that at times it is almost impossible to differentiate between very young forms of the tertian and estivo-autumnal parasites. During the course of the work here there have been several cases in which it was quite impossible to make more than a probable diagnosis at best; at the same time the majority of instances we have been able to find either more adult forms present or there have been full-grown parasites so that the diagnosis was comparatively a simple matter.

The presence of several stages in the life history of a parasite in the blood at one time is not to be wondered at. If one will consider that the natives use no mosquito bars or screens and that absolutely no measures are taken to kill or remove infected mosquitoes, one will readily see that the chances are greatly in favor of successive, irregular inoculations from infected mosquitoes the same night or on successive nights. Parasites introduced into the blood at different times would naturally have a tendency to run their cycles at different intervals with the result that several stages would occur in the same individual at the same time. Indeed, it is not uncommon to find two or even three distinct stages in development of the tertian parasite in the blood of a patient at the same time, giving rise to a double or even triple tertian infection. When three cycles are present at the same time, however, the infection loses, to a considerable extent, its periodicity and becomes more like an estivo-autumnal infection in its clinical manifestations. It is even not uncommon to see two different stages of the tertian parasite in the same blood corpuscle at one time.

The great preponderance of estivo-autumnal infections, as shown both in the tables here and in the Ancon Hospital Report for the period corresponding to that in which this investigation was carried out, is well borne

1. Arb. a. d. kais. Gesundhts., vol. xix, p. 2, 1902.

out by the findings in the dispensaries along the line, and by all odds this infection is the most common in this country. With the arrival of Americans and, in general, people from the more northern climates, there has been a gradual relative increase in the tertian malaria; the estivo-autumnal infection still, however, is the prevailing type among the natives and those exposed to mosquitoes which have become infected in the native villages and which consequently bear the native type of the disease.

The Quartan Parasite.—The quartan parasite is very uncommon here; during the course of this investigation not a case of quartan fever or quartan parasites was encountered, nor was there a case which in any manner resembled a quartan infection. There have been, however, a few cases reported in the hospitals, although they occurred in the majority of instances among men who undoubtedly contracted the disease in the United States.

Estivo-autumnal Parasites.—There are two recognized cycles in estivo-autumnal malaria, respectively twenty-four and forty-eight hours, giving rise to the so-called quotidian and subtertian varieties.

The periodicity in estivo-autumnal malaria, however, is less regular than that of the benign tertian, and there is a distinct tendency for attacks to "anticipate," particularly if medication or resistance on the part of the patient be not sufficiently great to prevent the action of the parasites; furthermore, the attacks tend to become fused; i. e., there are sufficient groups of parasites continuously reaching maturity to keep up a more or less steady stream of toxin, which is manifested clinically as a prolonged elevation of temperature, in which the quotidian or tertian tendency is manifested by major elevations, the lesser cycles by smaller excursions of temperature. This is particularly true of the subtertian type.

One may also have more or less regular, well-marked double or triple subtertian attacks, or double quotidian attacks, although the latter are much less well defined and uncommon.

The parasites are endoglobular during practically the entire course of their development. The earliest forms are minute, rather irregular, refractile bodies, with at times a tendency to assume the shape of a clover leaf; their form changes slowly at first, later with considerable rapidity. This body is located, as a rule, near the edge, on the edge (best and most clearly seen in stained preparations), or even lying in an apparent nick in the periphery of the red blood cell. The parasite changes its position in the corpuscle, grows gradually larger and coincidently the rapidity of the ameboid movement increases.

Not infrequently in grave cases of malaria one sees red blood cells which are shrunken and dark colored—the so-called "brassy corpuscles." They do not occur in every case, nor do parasites in severe cases necessarily give rise to this change in the erythrocytes. They do not occur exclusively in a grave infection either, and there is nothing to warrant the assumption that they are but of occasional occurrence and of no other diagnostic importance than any estivo-autumnal parasite. The ameboid stage may last for several hours; longer if the preparation be kept warm on a suitable warm stage, a shorter time if the slide cools. In the body the change is brought about in a few hours, giving rise to the ring form.

There is some dispute as to the mechanism of the formation of the ring. Marchiafava and Celli believe the rings are merely ameboid bodies which have become attenuated at the center, with a corresponding thickening at the periphery. The thin, central portion allows the hemoglobin to show through, giving the dark appearance so familiar in these bodies. Osler, Councilman and Antoisei believe the ring is formed by the inclusion of a portion of the red blood cell; the parasite first assumes a horse-shoe formation, the ends gradually penetrate through a portion of the erythrocyte, and the coalescence of the two horns of the crescentic parasite includes the small portion of the red blood cell. Marchiafava and Bignami, while not denying that this process may occur, believe that rings formed in this manner are not permanent; that they tend to return to the ameboid stage. In two instances I have seen the process described by Osler and Councilman occur. The ring so formed lasted in one instance for three hours. The preparation was cast aside after that time. From the fact that the center of the ring seems darker than the peripheral portion of the erythrocyte Marchiafava and Celli argue that the center must be of different material. But this is not a necessary assumption; the central portion may seem darker by contrast.[2]

The estivo-autumnal ring is small, rarely more than one-fifth the size of the red blood cell, and comparatively refractile. It is, as a rule, slightly fusiform or shaped like a clover leaf, particularly in the early portion of its existence. In the older rings there is usually a small amount of dark-colored pigment, arranged generally at the periphery of the parasite, and having only very slight movement; the rings themselves at this stage are less like the "signet ring" of the tertian parasite, being much thinner and less conspicuous.

The ring stage is succeeded by another ameboid stage; the parasite at this time is larger than the first ameboid and less actively motile. The production of pseudopodia at this time is, to a considerable extent, replaced by a sort of mobility; the parasite changes shape, but as a whole rather than by the protrusion and withdrawal of portions of its substance. The second ameboid stage is, except in rare cases, the last appearance of the parasite in the peripheral circulation. In severe cases, rarely in cases which are not severe, one may occasionally see the segmental process, but, with the exception of the crescent, one practically must follow the further development with parasites obtained by splenic puncture or from autopsies.

The localization of the parasites in the body, after they have left the peripheral circulation, has much to do with the clinical manifestations of the attack, gastric, cerebral, etc.

In the many autopsies I have seen and examined while engaged in this work, extending over eighteen months, there have been many so-called cases of malignant or pernicious malaria. The localization of the parasites in the brain, heart or stomach will, as a rule, explain in part the symptoms, but in no instance have there been any forms of the parasite noted which suggest even remotely that one is dealing with anything but the regular types of organisms already known to the profession.

In some cases there have been bizarre forms which stain with the metachromatic stains in a manner to suggest new forms, but they are not in sufficient numbers in any one case or of common occurrence in simi-

2. It should be mentioned that the estivo-autumnal ameboid is more refractile than the corresponding stage in the tertian parasite.

lar cases to warrant the assumption of any relation, however remote, with the illness or death of the patient. I have no reason to believe that pernicious or malignant malaria is other than the resultant of the following factors: (a) Large numbers of estivo-autumnal parasites; (b) comparatively exalted virulence of the parasites; (c) relatively low resistance on the part of the patient.

In some instances of extremely severe attacks of malaria, there have been only a very few parasites in the peripheral circulation; it may even be impossible to find them, but at autopsy they will be found in the bone marrow, spleen, heart, brain or some other internal organ. In the majority of severe or pernicious cases, however, there are many organisms in the peripheral circulation.

The so-called Chagres fever, a severe type of malaria, is caused by the estivo-autumnal parasite.

Crescents and Ovoid Bodies.—One usually associates crescents and ovoids with estivo-autumnal malaria; at least they are said to occur with a considerable degree of regularity, and one would expect to find them frequently in more or less protracted cases of malaria caused by this parasite.

The observation is general in Panama that the crescents and ovoids are comparatively uncommon.

There is no apparent reason for this. One would surely expect to find them in the blood of natives who have repeated attacks, and particularly among the young natives who have malaria almost continuously during certain periods of the year.

I have observed many cases of this kind, and particularly a gang of men who were working under my immediate direction. The men were under 25 years of age, and came from Martinique, which, except for a few locations along the sea coast, is said to be free from malaria. The blood of all these men was examined as soon as they arrived; they were landed from the steamer in the middle of the day, and brought to Panama in daylight. The blood was examined for three days and there was not the slightest indication of malaria. The men themselves declared they had never been sick with fever of any sort. They were lodged in a house which had been inhabited by some Jamaican laborers, from whose ranks there had been several severe cases of estivo-autumnal malaria. In two weeks, in spite of six grains of quinin solution a day per man, five came down with severe attacks.

During the three months they were under observation all were in the hospital at least twice, most of them three or four times. In only one case, which was one of those having only two slight attacks, were there crescents.

The distribution of crescents and ovoids among the natives of different ages will be described in another section of this paper.

The fact that these bodies are relatively uncommon would suggest that either the parasites develop into the crescents or ovoids in the mosquito from some antecedent form or else there is some other sexual form in virtue of which the parasites are able to complete their sexual cycle in the majority of cases in Panama.

I am engaged in a series of experiments to throw more light on this phase of the problem.

Tertian Malaria.—As its name implies, the tertian cycle takes approximately forty-eight hours to complete, although the time is not absolutely definite. In some cases, particularly those of rather more than moderate severity, the tendency is for the cycle to become shortened or to "anticipate." Conversely, as the attack is abating, in many instances the period is lengthened, giving rise to paroxysms more than forty-eight hours apart.

More than one cycle may be in progress at the same time, so that one may see two or even more series of parasites in various stages of development; in fact, a typical, single tertian fever is comparatively rare. Almost always one sees at least two sets of parasites in different stages of development. Conversely, in some of the more severe types the combination of several cycles and the tendency to anticipate cause a more or less marked fusion of excursions of temperature, with a resulting continuity of fever. This is not, however, as marked as is the case with the estivo-autumnal fevers.

As already stated, the younger stages in development of the tertian parasite are difficult to distinguish from the corresponding periods in development of the estivo-autumnal parasites. They are, however, somewhat larger and less refractile than the average estivo-autumnal organisms and rather more actively motile. The rapid succession of irregular, ameboid body, ring-shaped forms and linear forms occurring in the same parasite within a very few minutes is quite characteristic. This is most noticeable when the blood is fresh and kept in a fairly warm atmosphere.

The pigmented forms appear relatively earlier and are much more common; the pigment is very fine, and, as a rule, situated more or less peripherally, particularly in the ends of the pseudopodia. The rapid succession of forms involves the change in position of the pigment, and I believe that to a considerable extent this is the cause of the so-called motility of the pigment. In stained preparations the cytoplasm is much greater in extent in the tertian parasites, stage for stage; the chromatin body more pronounced; there are more vacuoles, and there is a more strongly marked clear zone around the chromatin than in the estivo-autumnal organism.

Comparatively early in the life of the tertian parasite the red blood cell usually becomes pale and swollen; this is probably the cause of the apparent lesser refractility of the tertian parasite, whereas in the estivo-autumnal organism there is a tendency for the red blood corpuscles to become darker, probably thus increasing the apparent refractility. Ewing has noted the not infrequent occurrence of so-called conjugating forms; two rings have apparently fused and he interprets this as an actual reproductive stage. While such forms are not rare, there seems to be no evidence in favor of this view; not infrequently one will see two centrosomes in one ring or one centrosome in a double ring, so situated as to preclude the possibility of fusion of centrosomes within any comparatively recent time.

The tertian parasite increases rapidly in size, mostly by growth of cytoplasm; the centrosome does not grow in proportion. The organism finally occupies four-fifths of the cell, sometimes almost the entire corpuscle, so that only with the closest scrutiny can one see the edge of the erythrocyte. The pigment increases in amount and finally becomes arranged more or less peripherally, preparatory to segmentation. Inasmuch as these forms (segmenting) are relatively uncommon, no detailed description will be made here. In stained specimens, one frequently sees in the older forms a peculiar red stippling of the erythrocyte; this is by no means a new observation, but it seems to be characteristic of the tertian infection, and I do not remember having seen it in the estivo-autumnal parasites.

Bodies, free in the blood serum, having the exact morphology and staining reactions of one-third to one-half grown tertian parasites, are seen occasionally. I

am inclined to believe they are, in reality, organisms which have been expressed by some means from the red blood cells, not that they represent an extracellular stage in development comparable to the full-grown parasite. At the same time one must consider the possibility of degenerated leucocytes.

Anopheles.—Without intending to discuss mosquitoes in this paper, I must mention the more common species of the genus *Anopheles,* the only genus of the *Culicidæ* known at the present time to play an important part in the transmission of malaria.

There are two anopheles in Panama which are relatively common: *A. albipes* and *A. pseudopunctipennis.* Of these the former is much the more important and abundant.[3]

I have strong circumstantial evidence that *A. albipes* is a very important mosquito in malarial transmission on the Isthmus, as the following case shows:

There is a row of small houses on the north side of Ancon Hill which originally were intended as quarters for lepers; they were used, however, for temporary barracks for some Jamaican laborers, one of whom suffered from a severe attack of malaria shortly before leaving the place. The houses were vacated for a week and turned over to a force of seven men who were brought in a steamer directly from Martinique to these quarters under my personal supervision. The journey from the ship to these houses was made in the middle of the day, when mosquitoes do not bite as a rule, and there is no probability that the men contracted malaria at this time. The blood of each man was very carefully examined for three successive days and found negative.

The men had lived in a portion of Martinique which is said to be free from malaria, and all claimed never to have suffered from fever of any kind. None had enlarged spleens, which are very common in this part of the world. Their work was purposely confined to a region immediately about their houses, and their only excursions from this place were to go to meals, about a quarter of a mile; this trip was always made before dark; they ate with a number of other negroes in a place which was as free from mosquitoes as could be found.

At the end of ten days malaria appeared; four were sent to the hospital suffering from severe estivo-autumnal infections; in six weeks all except one of the number had been in the hospital, all with precisely the same symptoms and running practically the same course, a typical estivo-autumnal infection which was clinically like that of the Jamaican who had lived in the house before them. Investigation of the house showed enormous numbers of *A. albipes;* the first day I removed fifty-six in about an hour. Two days later as many more were taken. The men had complained bitterly about the insects, and these mosquitoes were almost without exception engorged with blood. Very few male mosquitoes were seen. The other three houses, although within a few feet of the one inhabited by the Martinique men, were free from mosquitoes. No one had lived in them up to that time.

The house was screened, the ground round about cleared for a distance of seventy-five yards in every direction, a few marshy spots abolished and a general fumigation of the place made. The larvæ of the anopheles, which abounded within a few yards of the door of the house, were killed, the drains improved and the men placed on a regular quinin treatment consisting of three grains of quinin solution three times a day; this was taken in the presence of the foreman, and kept up for three months, at the end of which time the malaria had practically disappeared from all the men except two who contracted the disease in a chronic form and who later on were deported. In every case only *A. albipes* was found; no other anopheles being observed in all the insects removed from these houses.

In the huts of the natives along the line the same results have obtained; in almost every dwelling one may find albipes by simple sweeping with a broom along the roof of the house; the native huts are made of cane, with thatch for a covering, and the latter makes an excellent hiding place for the mosquitoes who remain quiescent during the day, but bite vigorously during the night. In fully 90 per cent. of such houses I found albipes, rarely any other species of anopheles.

IV. RESULTS OBTAINED IN THIS INVESTIGATION.

Race, Age and Sex.—Almost all writers agree that the very young suffer more than the adolescent and very old from malaria in tropical and subtropical countries. Koch found in New Guinea that 100 per cent. of the new-born were infected, and that the percentage of infected individuals gradually diminished up to the twenty-first year; from that age the natives suffered little from malaria. There seemed to be no perceptible distinction in the native population between males and females; each equally infected or free from parasites. He noted that many children with huge spleens and blood teeming with malarial organisms were running about "in rude health." Stephens, Christophers and Daniels, apparently confirming Koch's work in central Africa, believe the new-born and very young children are the most frequent sources from which mosquitoes are infected; they do not state the age limits when this tendency disappears, but one is led to infer that older children were relatively free from parasites in the peripheral circulation.

Schelling places the limit at which malarial parasites tend to disappear from the blood at 35 years; this is certainly less in harmony with the conditions here. While agreeing that the young are the most susceptible, most writers do not consider any age free from infection. We have found young urchins here, not more than 12 years of age, running about "in rude health" with temperatures from 101 to 103 where blood was literally filled with malarial parasites, usually estivo-autumnal rings. Marchiafava and Bignami write: "Malaria spares no age; but infants and children are more subject to this disease than adults. This is explained, in part at least, by the predilection of mosquitoes to attack delicate skins and by the very deep slumber of infants." Scheule is inclined to attribute the relative immunity in negroes, particularly the older ones, to their thick skin and pungent odor which, unless no more desirable subjects are available, drives away the mosquitoes. It is interesting to note that certain French observers have made similar observations; with *Stegomyia fasciata* they found the order of biting was as follows: Infants, young well-nourished individuals, well-nourished old people, anemic persons, all white; then young negro babies, children and finally adults. In Panama I have had the greatest difficulty in causing *Anopheles, Stegomyia* or *Culex* to bite adult negroes, while they would bite with the greatest eagerness any white individual exposed to their action.

Celli gives the following table of mortality according to age in Italy. It should be noted that this result, while having a bearing on the subject, is not comparable with the results mentioned above and not necessarily with the data tabulated in this paper:

Birth-5 yrs.	5-10 yrs.	11-20 yrs.	20-40 yrs.	40-60 yrs.	60-80 yrs.
19.4	48.9	38.6	24.3	23.9	23.9

3. It may be of interest to tabulate the species of anopheles which at the present time are supposed to transmit malaria. The information is drawn largely from Theobald, Howard and Giles.

Africa: *A. costalis, funestus, paludis.*

Europe: *A. bifurcatus, superpictus, maculipennis (claviger).*

India: *A, simensis (pscudopictus) Rossii, fuiginatus, culifacis, fluvitilis., Stephensii, Theobaldi, barbirostris, Turkhudi.*

America: *A. argyrotarsis, albipes.*

Therefore, no age is spared. The above statistics enable us not only to affirm that the highest mortality is between the ages of 5 and 20 years, but that malaria is relatively more prevalent in the older children than in the very young. Notter says: "As regards age and sex, males appear to suffer more than females, but possibly this is due to increased exposure to attack. No age seems to be exempt, although attacks are certainly less frequent among the very young and the very old." Stephenson and Murphy make practically the same statements as Notter, and, while laying stress on the fact that no age is spared, imply that the very young and very old are less liable to malarial attacks than the intermediate ages. Beim, Kohlstock and F. Plehn claim that malaria can exist *in utero*. They cite the case of a pregnant woman who had simple tertian malaria with chills every other day; on the alternate days the fetus had chills which were plainly felt through the abdominal wall of the mother. Bignami, Bastianelli, Caccini and Thayer, in a series of autopsies on pregnant women, found that the fetus shows no signs of malaria either in the blood or in pigmentation of the spleen or other organ. I saw a perfectly similar case.

The results of my observations in Panama, while comprising *in toto* a fairly large number of cases, are based on relatively few observations for each age-period. At the same time the results are fairly conclusive, particularly when they are compared with the observations made by writers in different countries.

With respect to age, the percentage of infection is very high at birth (including all individuals from birth to 1 year of age in this connection) and diminishes slightly and progressively until the fifteenth year is attained. From 15 years to old age the number of infected individuals decreases markedly in comparison with the previous years, but never goes so low as to warrant the statement that adolescence and old age are comparatively free from malaria. In fact, at any age over one-third of the inhabitants at the time these results were obtained harbored malarial parasites in their peripheral circulation. This does not necessarily mean that the same high general average would obtain all the year. In fact, the reverse is probably true. These observations were made during the height of the malarial season (October to January), and this period agrees well with the period of highest malarial illness in the hospitals. During the dry season the natives all agree that malaria is much less prevalent and much less severe.

The malarial infection is greatest during the first year of life and diminishes slightly up to the age of 15; from 15 on there is a rather abrupt drop, which remains practically the same through adolescence and old age, but at no time or in any age does the infection disappear entirely (Tables 1, 2, 3 and 4).

The statements concerning *sex* made by some observers do not obtain in Panama; instead of males being much more susceptible to malaria, there is very little difference between the males and females. Averaging the whole series of results, probably the males would show a slight increase over the females in infection, but the difference is so slight and so unevenly divided between the different periods of life that it is not safe to hazard an opinion on this subject.

Concerning the different *races*, the results show conclusively that the natives are much less infected after the first year than the foreign element. This is a point of great importance and will be discussed at greater length in the section on immunity. It will be sufficient to state here that the native born seem to be equally prone to malaria during the first year of life, and the symptoms are quite as severe as in the foreign born in the cases I have seen. From the first year, however, the cases, as a rule, are less severe, and even when the

TABLE 1.—SUMMARY OF RESULTS AT BOHIO.

Age in Years.	0-1		1-5		6-10		11-15		16-21		22-99		Total.		Total.
Sex.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F	M.	F.	
Estivo-autumnal	3	3	7	11	23	14	28	25	5	4	30	17	96	74	170
Estivo-autumnal ameboid	3	3	7	10	19	11	26	23	4	4	28	15	87	66	153
Estivo-autumnal ring	0	1	3	7	12	7	6	12	3	2	14	7	38	36	74
Estivo-autumnal pigmented	1	1	1	3	5	4	7	5	2	0	6	4	22	17	39
Estivo-autumnal crescent	0	1	0	0	0	0	0	1	0	0	0	0	0	2	2
Tertian	0	1	3	0	1	1	3	0	0	0	1	2	8	4	12
Mixed infection	0	1	3	0	0	0	3	0	0	0	1	1	7	2	9
Negative	0	0	3	2	4	11	1	10	3	0	17	12	28	35	63
Re-examined,															
Negative-positive	0	0	0	0	5	0	4	1	1	0	0	2	10	3	13
Positive-negative	0	0	0	0	2	4	0	0	0	0	0	2	0	4	6
Positive-positive	0	0	0	0	1	2	4	4	0	0	0	0	5	6	11
Negative-negative	0	0	0	0	0	0	1	2	1	0	3	1	5	3	8
Total estivo-autumnal		6		18		37		53		9		47	96	74	170
Total tertian		1		3		2		3		0		3	8	4	12
Total mixed infect'ns		1		3		0		3		0		2	7	2	9
Total crescents		1		0		0		1		0		0	0	2	2

Total cases examined, 236; total cases positive, 173; total cases negative 3.

TABLE 2.—SUMMARY OF RESULTS AT GATUN.

Age in Years.	0-1		1-5		6-10		11-15		16-21		22-99		Total.		Total.
Sex.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F	
Estivo-autumnal	2	2	19	14	9	9	6	7	2	4	28	19	66	55	121
Estivo-autumnal ameboid	2	2	18	13	9	6	6	6	2	3	27	19	64	49	113
Estivo-autumnal ring	1	0	9	7	3	4	3	3	1	3	10	7	27	24	51
Estivo-autumnal pigmented	0	0	7	5	2	3	4	5	1	2	6	5	20	20	40
Estivo-autumnal crescent	0	0	0	0	1	1	0	1	0	0	4	1	5	3	8
Tertian	0	0	1	2	0	3	0	1	0	0	1	2	2	8	10
Mixed infection	0	0	0	2	0	1	0	1	0	0	0	0	0	4	4
Negative	0	3	8	10	7	6	8	8	4	8	27	38	54	73	127
Total estivo-autumnal		4		33		18		13		6		47	66	55	121
Total tertian		0		3		3		1		0		3	2	8	10
Total mixed infect'ns		0		2		1		1		0		0	0	4	4
Total crescents		0		0		2		1		0		5	5	3	8

Total cases examined, 254; total cases positive, 127; total cases negative, 127.

TABLE 3.—SUMMARY OF RESULTS AT BOHIO AND GATUN.

Age in Years.	0-1		1-5		6-10		11-15		16-21		22-99		Total		Total.
Sex.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F	
Estivo-autumnal	5	5	26	25	32	23	34	32	7	8	58	36	162	129	291
Estivo-autumnal ameboid	5	5	25	23	38	17	32	29	6	7	55	34	151	115	266
Estivo-autumnal ring	1	1	12	14	15	11	12	15	4	5	24	14	68	60	128
Estivo-autumnal pigmented	1	1	8	8	7	7	11	10	3	2	12	9	42	37	79
Estivo-autumnal crescent	0	1	0	0	1	1	0	2	0	0	4	1	5	5	10
Tertian	0	1	4	2	1	4	3	1	0	0	2	4	10	12	22
Mixed infection (A-E and T)	0	1	3	2	0	1	3	1	0	0	1	1	7	6	13
Negative	0	3	11	12	11	17	9	18	7	8	44	50	82	108	190
Re-examined:															
Negative-positive	0	0	0	0	5	0	4	1	1	0	0	2	10	3	13
Positive-negative	0	0	0	0	2	4	0	0	0	0	0	0	2	4	6
Positive-positive	0	0	0	0	1	2	4	4	0	0	0	0	5	6	11
Negative-negative	0	0	0	0	0	0	1	2	1	0	3	1	5	3	8
Total estivo-autumnal		10		51		55		66		15		94	162	129	291
Total tertian		1		6		5		4		0		6	10	12	22
Total mixed infect'ns		1		5		1		4		0		2	7	6	13
Total crescents		1		0		2		2		0		5	5	5	10
Total negative		3		23		28		27		15		94	82	108	190

Total cases examined, 490; total cases positive, 300, = 61.22 per cent.; total cases negative, 190, = 38.78 per cent.

TABLE 4.—MALARIAL INFECTION; BY AGE, SEX AND RACE.

Age in Years.	Males. Positive.		Males. Negative.		Females Positive.		Females Negative.	
	Pan.*	Jam.†	Pan.	Jam.	Pan.	Jam.	Pan.	Jam.
0-1 year.								
Number of cases. . . .	3	2	0	0	4	1	3	0
Per cent.	100	100	0	0	57	100	43	0
1-5 years.								
Number of Cases. . . .	22	5	11	0	19	6	12	0
Per cent.	67	100	33	0	61	100	39	0
6-10 years.								
Number of cases. . . .	20	13	9	2	22	4	13	4
Per cent	68	87	32	13	63	50	37	50
11-15 years.								
Number of cases. . . .	23	11	6	0	29	3	15	3
Per cent.	79	100	21	0	66	50	34	50
16-21 years.								
Number of cases. . . .	3	4	6	1	8	0	8	0
Per cent.	33	80	67	20	50	.	50	. . .
22-99 years								
Number of cases. . . .	23	36	25	19	26	13	42	8
Per cent	48	65	52	35	38	62	62	38

* Indicated Panamanians, i. e., natives. † Jamaicans, i. e., foreign born. This includes natives of the West Indies.

parasites are present in the blood the individuals suffer relatively less than the foreign born; they enjoy a "rude health," to repeat Koch's epithet.

Table 4 is a summary of the results of this investigation tabulated according to race and sex; for convenience the natives are contrasted with all other peoples, not native born. When the data on which this table is based were obtained, particular attention was paid to the question of birthplace and place of residence of each individual. This plan was carried out even to the very youngest; under the heading "Panamanian" is included all those whose parents are natives of Panama or Colombia, while the term "Jamaican" includes all other individuals. Usually, in fact almost exclusively, the latter are natives of the West Indies and have lived in this climate a comparatively short time. The very young of this class were, however, as a rule, born in Panama.

We have, then, two distinct groups of cases—one whose parents are native born and who have been exposed to the type of malaria prevalent in Panama from earliest infancy; the other those of foreign parentage and not exposed to this type of malaria.

The fact that the very young of both classes are born in Panama might at first sight seem to be prejudicial to exact results, but the fact that the young of both classes suffer equally from this disease simplifies what otherwise would be a serious objection to the table herein outlined.

Of the 355 natives examined, 202 were positive and 153 negative; this is very nearly 4 positive to every 3 negative, or 57 per cent., with malarial parasites in their blood as contrasted with 43 per cent. without parasites. Of the foreigners, on the other hand, 135 cases, 98, or about 73 per cent., were positive, while 37, or 27 per cent., were negative. In other words, of the native born (all ages) three out of five were positive to malaria, while the foreign born had three out of four with malarial parasites. Table 4 shows quite clearly that up to 15 years of age both native and foreign born children suffer severely from malarial infection. The effect of long-continued residence in this particular climate is shown in Table 5.

Even in the very young, under 5 years of age, there is a noticeable difference in the percentage infected between natives and foreigners, but this is much less marked than the differences obtaining after one reaches the age of 15; from that time on the ratio of infected to non-infected is much different; the natives have less infected than non-infected in the proportion of about three to four, while the foreign born have more infected than non-infected in the proportion of five to three.

TABLE 5.

Age in Years.	Native Born.				Foreign Born.			
	Males.		Females.		Males.		Females.	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
0-1	3	0	4	3	2	0	1	0
1-5	22	11	19	12	5	0	6	0
6-10.	20	9	22	13	13	2	4	4
11-15.	23	6	29	15	11	0	3	3
Totals.	68	29	74	43	31	2	14	7
16-21.	3	6	8	8	4	1	0	0
22-99	23	25	26	42	36	19	13	8
Totals.	26	31	34	50	40	20	13	8
Grand totals.	94	60	108	93	71	22	27	15

This fact is very significant; in the native born, at the age of about 15, the proportion of infected to non-infected changes from nearly two to one to a ratio of about three positive to four negative; in the foreign element the ratio of five infected to one non-infected, up to 15 years, changes to five infected to two non-infected during the later years of life. This can mean but one thing: That in extreme youth the children or, more properly, infants are all extremely susceptible to malaria; as they become older this susceptibility seems to diminish, or at least there are fewer cases in our series relatively showing malarial parasites in their peripheral circulation; the change to relative immunity begins much younger in the natives and is developed to a much higher degree, so that in the older individuals actually less than one person is infected for about every two infected while in the foreign population, although there is a distinct tendency toward an acquired immunity, the change never becomes marked, and at no time does the latter class begin to show the resistance and the lessened infection to the malarial parasites that we see in the natives.

We have, then, among the natives a distinct acquired immunity; this is manifested by the greatly lessened number of infected individuals to non-infected individuals as one chooses later periods of life for comparison. At the same time there is strong evidence to show a tendency at least toward congenital or inherited immunity. This is amply shown by the above statistics; the differences between the groups of individuals is extremely well marked, and there can be no doubt whatever that the inferences drawn by previous investigators concerning the existence of an acquired immunity among those who have lived in countries where they are continually exposed to malaria are correct.

Occupation.—Malaria is an environmental rather than an occupational disease; while text-books enlarge on the evil effects following certain occupations, one must not infer that the vocation *per se* is the essential factor. For example, the pastoral population of certain portions of Italy suffer excessively from malaria, but, aside from certain lowering of the body resistance by exposure, the malarial mosquito is the infecting agent, and this disease occurs merely because the people, of necessity, must live in places where such insects abound. If the laborers can return, after the working day, to locations free from anopheles, the suffering from malaria is reduced to a minimum.

In order to determine, if possible, the relation between occupation and malaria in Panama, the natives were questioned at the time of their examination concerning their occupations. In many instances no information could be gained; those individuals, however, who did have an occupation were questioned closely concerning the character of the work, and the table shows the results of our observations in this direction.

There seems to be no general rule with regard to the percentage of infected individuals in any trade; the results are extremely varied and from one point of view inconclusive; what they do show, however, is the fact that no one occupation is really less conducive to malaria than any other. In other words, my results simply confirm the statement that malaria is environmental, and occupation, as a rule, has no effect on the general tendency toward this disease.

Immunity.—This is one of the most interesting, perplexing and important problems, even aside from its probable relation to acclimatization, that one has to do with in tropical countries.

TABLE 6.—OCCUPATION AND MALARIA.

Occupation.	Gatun.		Bohio.		Total.	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Laborer	5	7	17	15	22	22
Per cent	42	58	53	47	50	50
Cooks*	9	11	15	7	24	18
Per cent	45	55	69	31	57	43
Washwoman	7	17	5	3	12	20
Per cent	30	70	63	37	38	62
Farmers	2	4	9	0	11	4
Per cent	33	67	100	0	73	27
Storekeepers	11	4	6	2	17	6
Per cent	73	27	75	25	74	26
Dressmakers	1	3	1	0	2	3
Per cent	25	75	100	0	40	60
Carpenters	1	3	3	0	4	3
Per cent	25	75	100	0	60	40
School children†	...	...	70	33†	...	...
Per cent	...	...	68	32	...	...

* Cooks include all housewife work.

† The distribution by sex is as follows:

	Males.		Females.	
	Pos.	Neg.	Pos.	Neg.
	37	14	33	19
†Per cent	72	28	63	37

This table comprises only a small fraction of the total number of individuals examined; the majority, however, would give no occupation when asked; only those acknowledging a calling are included in the table.

After discussing certain factors supposedly predisposing to malaria, in which he lays considerable stress on those factors which tend to lower the vital resistance, Celli discusses to considerable length the question, "Are there races immune from malaria"? He cites the case of bovine malaria in the cattle in the Campagna; they are rarely attacked by this disease, while cattle imported from Holland, Switzerland, Lombardy and other neighboring countries are rapidly decimated. Concerning human malaria, he cites Maurel, who says: "Practically no human race is immune to malaria, not even the black race, said by some to be immune. In places where severe malaria exists, certainly the black population which inhabits them acquires a relative immunity to the disease; but if in these same places another black population arrives which previously inhabited non-malarious places it is decimated by the fevers. A white population, also, which for centuries has lived in regions of intense malaria, finally acquires a relative immunity against malaria; that is, adapts itself to resist it. By this means a remarkable population, whose ancestors have lived in the Pontine Marshes for centuries, has become resistant to malaria; while a colony of Venetians, who lately were brought thither, were literally decimated by the fevers." Again, the poorly fed, poorly housed so-called hut dwellers, although much less physically fit than the agricultural peoples living in relatively healthy surroundings, suffer to a much less extent than the latter. Therefore, the fact of a natural relative immunity of some races from malarial infection is evident. This comes about apparently by habits and customs appropriate to such conditions and partly, no doubt, by an acquired tolerance to the malarial toxin or organism brought about by repeated attacks and recoveries.

Marchiafava and Bignami have summarized the status of malarial immunity thus:

> We have seen that even when placed under the same conditions not all races are equally prone to contract malaria. Although there are no races originally immune to malaria, we are forced to recognize the fact that the various races present a varying degree of resistance to malarial infection; thus negroes inhabiting malarious regions in the tropics are less subject than white men in the same place to grave forms of malaria, and having once been infected they acquire, so it has been asserted, a relative immunity more readily than whites. Writers do not agree that negroes are racially immune; probably this is not true. The residents of the Kamerun coast, according to F. Plehn, seldom have malaria, and when they do the paroxysm rarely lasts more than a few hours. A change of residence deprives them of this relative immunity, at least temporarily. The relative immunity enjoyed by the natives of Abruzzo, in Italy, seems to be partly at least an acquired characteristic and partly congenital. This is explained by a process of natural selection, whereby in past generations those more fitted to withstand the malarial infection survived the ordeal and transmitted their acquired relative immunity to their offspring. The acquired factor is, however, less marked than would seem at first sight, while instances are known in which an active, acquired immunity has apparently been produced; these well authenticated cases are rare, and one can safely count only on the racial relative immunity as a whole.

Koch has confirmed the relative immunity of the negroes of the west coast of Africa, and has noted the course of the estivo-autumnal fevers (tropical fevers) in them and the occurrence of a spontaneous cure.

Cinchonization Experiments.—These experiments were undertaken to see if moderately small doses of quinin repeated daily for a short time would cause malarial parasites to disappear from the peripheral circulation in individuals who had no severe symptoms in addition to the organisms. Children, whose ages ranged from 6 to 16, were chosen for this work, and for convenience those attending school were especially selected. Such individuals would, to a certain extent, have acquired a tolerance for the malarial parasite without the development of immunity to any considerable degree.

Forty-one children took sulphate of quinin, 4 gr., in the form of a tabloid for six successive days. The drug was administered at the local dispensary, where the children reported at a definite time each day, and was taken in the presence of the attendant at that time, who made a record for each case. Six of the forty-one patients showed no malaria after three examinations made on successive days, and they were used as controls. It is perfectly possible that, existing in a latent form, malaria might be brought out by the drug, and it was for this reason that the controls were brought in. At the end of six days thirteen showed malarial parasites; this examination was repeated the next day with the same results, so there can be no doubt that in certain cases, at least, in which no definite febrile symptoms exist, quinin will not, in the dose given and in the given time, remove the parasites completely from the

blood. None of the controls showed parasites at the end of the six days.

SUMMARY AND CONCLUSIONS.

1. Malaria existed in certain towns of the Canal Zone at the time this work was done to such an extent that over 50 per cent. of the native born and 70 per cent. of the foreign born harbored parasites in their peripheral circulation.

2. This high percentage of infection does not necessarily mean that a corresponding number present febrile symptoms; in fact, many do not.

3. This high percentage of infection is a menace to the health of those who, by reason of their work, may be compelled to remain in such towns, particularly because of the wide distribution of the *Anopheles albipes*, a mosquito shown to be capable of transmitting malaria. Other anopheles to a lesser extent may also be factors in distributing malaria.

4. The estivo-autumnal malaria is the prevalent type; the Chagres fever is, in all probability, a severe estivo-autumnal infection. Pernicious malaria is not caused by a new parasite, but by an estivo-autumnal organism of exalted virulence.

5. Natives and their descendants or, in general, the descendants of those who have lived continuously on the Isthmus of Panama for many years, at birth have, to a certain degree, an inherited immunity; an active immunity, which is by no means absolute, is generally acquired, becoming manifest at about the age of 16. The foreign born acquires a tolerance to the malarial organism; this tolerance, however, is not as great nor does it begin as early as is the case with natives.

6. Malaria is an environmental disease; occupation has very little to do with the cause of this disease.

7. Quinin in moderate daily doses, while not absolutely guaranteeing freedom from malaria, or completely driving organisms from the circulation, has an important preventive and curative effect.

In conclusion, I wish to express my indebtedness to Col. W. C. Gorgas, Chief Sanitary Officer, and to Major H. R. Carter, Director of Hospitals, for their advice and kindly criticism during the progress of this work.

A REVIEW OF CANCER IN THE UNITED STATES, ACCORDING TO THE TWELFTH CENSUS.*

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There is no question before the profession or the laity that commands so much interest and even anxiety as that of the presence and mortality of carcinoma.

For many years there have been more or less sporadic efforts toward the investigation of the subject, but it is only within the last decade that serious attempts have been made in that direction. In that period various institutions have been established for the specific purpose of investigating this disease in all its relations, social, biologic, physiologic, chemic and pathologic. Although there has been no one discovery to stand forth beyond all others, yet valuable work has been done and is being done. The question was such a comparatively new one that much labor had to be expended in clearing the field from dead wood. Many ideas and theories had to be eliminated. With the field once cleared progress can be made much more rapidly and successfully.

The discovery that malignant tumors exist in the lower animals in their wild states has removed many of the beliefs concerning the effects of civilization on their formation. By the experiments conducted on mice in regard to the transplantation of carcinoma much may be reasoned out in its analogy to neoplasms in mankind.

Besides the laboratory investigations there is still much of value to be obtained from the statistical reviews concerning the prevalence of carcinoma in relation to the population of given countries or sections.

A question that still remains, to a certain degree, unsettled is whether carcinoma is actually on the increase. The opponents of that belief argue that the increase is an apparent one only and not real. They claim that the present figures represent merely an improvement both in the methods of diagnosis and in the registration of cases. Such objections may hold good to a certain degree if the figures of forty and fifty years ago are compared with those of to-day. Our methods of the present are more accurate in every way and may be answerable for some of the increase. If, however, the figures of the past two decades are taken into consideration the objections can not hold to such an extent. The improvements in diagnosis in that time have not advanced so wonderfully.

Further, as laboratory methods have improved many tumors have been removed from the category of malignant growths and have been put in the benign class. It would seem reasonable to expect that improved diagnoses would decrease the number of carcinoma cases. Instead of every tumor present in a person dying being considered the cause of death, and consequently cancerous, their true nature is now disclosed.

For the sake of comparison the death rates from consumption and pneumonia have been included with that of cancer in Table 1. This shows the principal reported causes of deaths in the United States in the census years of 1900 and 1890, in the order of their frequency, with the proportion from each cause per 100,000 from all causes.

TABLE 1.

	1900.		1890.	
Cause of death.	Number.	Proportion.	Number.	Proportion.
Consumption.	111,059	10,688	102,199	12,146
Pneumonia	105,971	10,198	76,496	9,091
Cancer	29.475	2,837	18,536	2,203

The census table, of which Table 1 is a part, also shows an increase over 1890 in the proportion of deaths due to pneumonia, heart disease, diseases of the kidney, typhoid fever and cancer and a decrease in consumption and diarrheal diseases. In this table cancer ranks sixth.

For the registration area in 1900 and 1890 the number of deaths from certain causes and the death rates due to each cause per 100,000 of population were: In 1890 the number of deaths from cancer was 9,410 and the death rate was 47.9. At that time cancer came thirteenth on the list of causes of death. In 1900 there were 17,296 deaths, with a death rate of 60.0 and a position of seventh on the list. The figures for the corresponding years from consumption were, for 1890, 48,236 deaths and a death rate of 245.4; for 1900, 54,898 deaths and a rate of 190.5. From being first it dropped to second on the list. From pneumonia there were in 1890, 36,752 deaths and a rate of 186.9; for 1900, 55,296 deaths and a rate of 191.9, thus displacing consumption from the first place. The tables from which these figures are obtained show an increase in the relative mortality from diseases most frequent in adult life and advanced age and a decided decrease incident to infancy and early youth.

* Compiled from the last census of the United States. Figures concerning other countries have been obtained from various sources.

The death rate from consumption, pneumonia and cancer in the registration area and its subdivisions per 100,000 of population in 1900 in comparison with 1890 is shown in Table 2.

TABLE 2.

	Pneumonia.		Consumption.		Cancer.	
	1900.	1890.	1900.	1890.	1900.	1890.
Registration record...	191.9	186.9	190.5	245.4	60.0	47.9
Registration, cities..	210.5	201.4	208.2	265.6	58.3	47.1
Registration, states:						
Total	193.3	197.3	179.4	249.0	62.1	50.9
Cities	233.1	234.1	249.0	208.7	59.8	51.3
Rural	135.9	141.1	137.1	181.0	65.3	50.3
Registration, cities in other states	189.9	171.1	207.7	239.9	57.0	43.2

From this table it is seen that the decrease in the death rate per 100,000 of population in consumption in the past ten years was 54.9. In that same time the death rate in cancer has increased 12.1 and pneumonia 5.0 per 100,000, as shown in Table 3.

TABLE 3.

	Total.	Cities.	Registration States, Total.	Registration States, Cities.	Rural.	Cities in Other States.
Consumption, decrease..	54.9	57.4	69.6	84.8	43.9	32.2
Pneumonia, increase....	5.0	9.1	4.0*	1.0	5.2	18.8
Cancer, increase	12.1	11.2	11.2	8.5	15.0	13.8

* Decrease.

According to the rate of increase, cancer comes fifth, being led by the increase in diseases of the kidney, in influenza, apoplexy and heart disease. The following tables and conclusions deal more definitely with the social and economic phases of carcinoma.

Deaths from cancer and tumor are first considered because it is impossible to distinguish them as they are commonly reported. Other points will be taken up more especially from the figures in the registration area. In Table 4 deaths from cancer are set forth for the census year of 1900.

TABLE 4.

	United States.		Registration area.	
	Male.	Female.	Male.	Female.
Cancer	11,436	18,039	6,388	10,908
Tumor	1,305	2,122	694	973

The total number was 32,902, of which 12,741 were males and 20,161 females. The proportion of deaths from these diseases in 1,000 deaths from a known cause was 32.9. In 1890 the corresponding proportion was 25.4.

In the registration area the number of deaths reported as due to cancer and tumor was 18,963, of which 7,082 were males and 11,881 females, giving a proportion of 37.4 deaths from these causes in every 1,000 deaths. A death rate of 65.8 per 100,000 of population. In 1890 the death rate was 53.1.

In the census years of 1900 and 1890 the death rates from cancer and tumor in the registration area and of its subdivisions show that the mortality from these two diseases was highest in the rural districts of the registration states (1900, 71.4 per 100,000; 56.0 in 1890) and lowest in the cities in the non-registration states (63 per 100,000 in 1900; 48.2 in 1890). It was higher among the whites (66.7 in 1900; 53.9 in 1890) than among the colored (47.7 in 1900; 36.7 in 1890). It was much higher in the native whites of native parents (66.9 in 1900; 58.6 in 1890) than in those of foreign parents (25.7 in 1900; 17.9 in 1890) and highest of all for the foreign whites (124.6 in 1900; 93.3 in 1890).

The relatively higher death rates of females (white, 83.2 in 1900; 69 in 1890; colored, 66.2 in 1900; 53.6 in 1890) than of males (white, 50.1 in 1900; 38.8 in 1890; colored, 28.6 in 1900; 19.2 in 1890) are due to the greater tendency of these diseases to attack the female mammary and generative organs. In comparison with 1890 there was a decided increase in the death rates due to cancer and tumor, ranging from 15 per cent. in the cities in the registration areas to 27 per cent. in the rural districts.

Deaths from cancer alone from the registration area and its subdivisions, which comprise certain states and cities in which the returns were sufficiently accurate to allow more definite tabulations, will now be considered. This area is composed of Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut and Michigan and fifty cities not in the above states. In this latter class are included all of the largest cities in the respective states, such as Philadelphia, St. Louis, Baltimore, San Francisco, Milwaukee, St. Paul, New Orleans and others.

According to the death rates from cancer alone per 100,000 population, the registration states rank as follows:

Maine	83.7	Rhode Island	62.3
Vermont	81.8	New York	61.2
District of Columbia.....	71.8	Connecticutt	61.1
New Hampshire	66.8	Michigan	58.0
Massachusetts	66.4	New Jersey	50.4

The average death rate in these states, according to the districts and sex, was:

		Males.	Females.
Cities	59.8	41.7	77.2
Rural	65.3	47.7	83.7

The highest death rate (113.3) was among the females in the rural districts in New Hampshire and lowest (31.5) among the males in the cities in New Hampshire. The total number of deaths reported due to cancer alone in the United States during the census year of 1900 was 29,475, of which 11,436 were males and 18,039 were females, and the proportion of deaths from this disease in 1,000 deaths was 29.5. In 1890 the corresponding ratio was 22.5. In the registration area there were 17,296 deaths from cancer. Of these 6,388 were males and 10,908 females, giving a proportion of 34.1 deaths from this disease in 1,000 deaths from all known causes, and a death rate of 60 per 100,000 of population. In 1890 the death rate was 47.9. The proportion of 34.1 is made up of 12.58 or 36.9 per cent. males and 21.51 or 63.1 per cent. females. Of the 17,296 deaths 16,758 were white and 538 colored. In England and Wales the death rate from cancer in the year 1899 was 82.9 (males 67.2; females 97.7). The increase in the English rate between 1890 and 1899 (15.3 per 100,000) was greater than the increase in the registration area of the United States between 1890 and 1900 (12.1). The death rate from cancer during the census year for the registration area and its subdivisions per 100,000 of white population by birthplace of mothers is given in Table 5.

TABLE 5.—DEATH RATES BY BIRTHPLACES OF MOTHERS.

Birthplaces of Mothers.	Total.	Cities.	Registration record. States.			Cities in Other States.
			Total.	Cities.	Rural.	
United States.....	48.3	40.4	52.4	45.4	58.2	30.4
France	92.8	96.4	83.6	85.3	79.7	117.3
Scotland	81.8	74.4	87.3	83.2	96.0	50.2
Germany	78.2	79.7	79.6	82.6	70.5	74.7
Ireland	76.4	75.0	76.4	74.7	82.5	76.6
England and Wales.	72.0	70.9	71.4	69.6	74.9	75.1
Canada	40.3	37.8	40.6	38.0	43.8	36.0
Hungary, Bohemia.	31.5	33.1	27.4	29.3	16.0	39.0
Scandinavia	31.1	32.8	30.7	33.7	25.3	31.9
Russia, Poland....	25.7	25.9	26.2	26.6	23.5	23.1
Italy	22.8	23.3	21.7	22.0	20.1	34.3
Other countries...	48.5	49.1	49.0	49.9	46.8	46.0

This table shows that the death rates due to cancer were highest among those whose mothers were born in

France, 92.8; in Scotland, 81.8, and in Germany, 78.2; and were lowest in those whose mothers were born in Scandinavia, 31.1; in Russia and Poland, 25.7, and in Italy, 22.8.

CANCER IN CITIES.

The increase in the death rate in the cities and rural districts is not equally rapid, as in the latter the advance over the returns of 1890 has been decidedly more rapid than is the case in the cities. In 1902 the five following cities led the list in regards to the number of deaths from cancer in every 1,000 deaths from all causes:

	1902.	1903.
Brockton, Mass.	80.6	61.2
Davenport, Iowa	79.9	50.6
Auburn, N. Y.	71.9	73.1
Jackson, Mich.	67.2	56.4
Rochester, N. Y.	65.8	...

In 1903 the following five cities were at the head:

	1903.	1902.
Saginaw, Mich	73.2	65.5
Malden, Mass.	73.1	57.0
Auburn, N. Y.	73.1	71.9
Quincy, Mass.	69.4	...
Grand Rapids, Mich.	69.2	59.7

In regard to the size of the cities, the death rate in the two years of 1902 and 1903 per 1,000 deaths in the ten largest was as follows:

	1903.	1902.
New York.	38.7	35.9
Chicago	41.9	44.4
Philadelphia	38.2	38.2
St. Louis	40.3	31.8
Boston	50.9	45.7
Baltimore	38.3	39.8
Cleveland	37.4	34.3
Buffalo	47.0	45.3
San Francisco	58.7	59.4
Cincinnati	44.5	43.2

It therefore seems that the death rate from cancer averages less in the larger cities than in the smaller ones.

DEATH RATE AT VARIOUS AGES.

According to four-year periods, there is a gradual increase in the number of deaths up to 25 to 29 years. There is then a rapid rise up to 55 years, when it remains nearly stationary till 70, at which point the mortality begins to fall rapidly.

TABLE 6.—DEATHS FROM CANCER AT EACH AGE PER 1,000 DEATHS.

	1900.		1890.	
Age.	Male.	Female.	Male.	Female.
20-24	7.5	4.3	6.5	7.0
25-29	10.5	13.3	15.7	16.3
30-34	19.9	30.8	23.7	39.0
35-39	34.5	60.4	43.8	59.3
40-44	58.0	89.3	54.2	95.2
45-49	84.1	115.6	86.3	115.7
50-54	117.5	122.8	111.6	133.5
55-59	131.2	133.3	130.3	121.3
60-64	136.6	124.9	148.5	122.9
65-69	139.5	112.0	143.9	100.9
70-74	113.1	83.2	100.5	77.4
75-79	81.0	58.9	70.3	53.9
80-84	37.3	31.1	33.3	30.2
85-89	14.6	11.0	13.3	13.9

The figures of Table 6 show that the cancer mortality among females takes on a more rapid increase at an earlier period than in males, and that the female mortality is about a single four-year period ahead until the 55-59 period is reached, when the figures are approximately the same. From then on the mortality of females decreases while that of the males remains fairly stationary till 69 years, when it also diminishes, and the two death rates again approximate during the 85-89 period. It would seem that if a woman lives to be 60 years of age she is much more likely to escape having cancer than is a man, as that seems to be the age in men at which the mortality from cancer is the greatest. The average age at death from cancer in the registration area in 1900 was 58.1 years. In 1890 it was 57.2. For those dying at 15 years of age and over the average age in 1900 was 58.3 and in 1890 was 57.5.

TABLE 7.—DEATH-RATE FROM CANCER PER 100,000 OF POPULATION OF CORRESPONDING AGES, BY BIRTHPLACES OF MOTHERS.

	Age.		
Birthplaces of mothers.	15-44	45-64	65 and over.
Scotland	27.2	151.	533.8
France	23.9	212.1	428.3
Germany	22.8	226.2	530.4
Ireland	22.2	215.1	452.1
Russia	21.6	245.3	654.6
England and Wales	21.4	171.5	415.5
Canada	17.1	176.0	434.0
Scandinavia	16.1	148.1	371.8
United States	14.7	145.1	349.4
Italy	14.5	115.0	....
Hungary and Bohemia	13.4	209.0	....
Poland	9.4	88.5	263.5

If those of 65 years and over are noted it will be seen in Table 7 that the rates were highest in those whose mothers were born in Russia, 654.6; in Scotland, 533.8; in Germany, 530.4; and were lowest in those whose mothers were born in the United States, 349.4; in Hungary, 280.9; and in Poland, 263.5.

TABLE 8.—DEATH RATES FROM CANCER FOR THE REGISTRATION AREA AND ITS SUBDIVISIONS DURING THE CENSUS YEAR, IN EACH OF FIVE AGE GROUPS PER 100,000 OF POPULATION OF CORRESPONDING AGES BY SEX.

Registration areas.	Under 5	5-14	15-44.	45-64	65 and over.
Total	1.3	0.8	20.5	194.8	454.3
Males	1.5	0.7	11.5	136.6	417.0
Females	1.1	0.9	29.4	253.0	487.6
Cities	1.0	0.9	21.6	212.3	482.4
Males	1.0	0.7	12.4	155.6	456.5
Females	1.0	1.0	30.6	269.2	503.5
States	1.5	0.9	19.6	183.5	447.3
Males	1.8	0.9	10.2	122.9	394.0
Females	1.2	0.8	29.0	244.3	495.7
Cities	1.0	1.1	21.4	209.8	494.2
Males	0.9	1.2	11.3	147.3	439.2
Females	1.1	1.0	31.2	269.8	536.9
Rural	2.3	0.5	16.6	153.2	412.9
Males	3.1	0.6	8.5	96.1	365.3
Females	1.4	0.5	25.2	213.4	461.4
Cities in other States	1.0	0.7	21.8	214.8	470.7
Males	1.0	0.4	13.5	163.2	472.8
Females	0.9	1.0	30.1	268.7	468.9

Table 8 shows that the mortality from cancer was greatest in persons of 65 years and over, and at this age it was higher in females (487.6) than in males (417.0), and was higher in the cities (494.2) than in the rural districts (412.9) of the registration states.

TABLE 9.—DEATH RATES AT CERTAIN AGES, BY CONJUGAL CONDITIONS.

Sex.	15-44.			45-64.			65 and over.		
	Single.	Married.	Widowed.	Single.	Married.	Widowed.	Single.	Married.	Widowed.
Total	8.7	28.6	69.6	192.1	175.6	256.4	518.7	426.0	455.8
Males	6.5	15.7	40.3	142.1	125.8	200.8	512.5	388.0	433.7
Females	11.3	39.8	80.7	248.8	238.8	275.9	523.1	496.7	464.9

Table 9 shows that from 15 to 44 years of age the death rate of the married of both sexes was higher than that of the single. Above 44 years the rate for the single was higher in both sexes than for the married, and at 65 years and over it was higher in the single of both sexes than in either the married or the widowed.

CANCER OF VARIOUS ORGANS.

Table 10 shows, for the registration area, the number of deaths at certain ages from cancer of certain specified organs or parts per 1,000 total deaths at the same age, from cancer for which the organ or part is known, by sex.

This table also shows that in each 1,000 deaths of males at all ages from definitely located cancer—

430.6 were due to cancer of the stomach.
145.6 were due to cancer of the liver.
104.2 were due to cancer of the head, face and neck.
95.5 were due to cancer of the mouth tongue and throat.
92.4 were due to cancer of the abdomen.
54.9 were due to cancer of the rectum.

In females the distribution per 1,000 deaths from cancer was as follows:

276.2 were due to cancer of the uterus.
244.7 were due to cancer of the stomach.
157.8 were due to cancer of the breast.
125.9 were due to cancer of the liver.
76.9 were due to cancer of the abdomen.
35.5 were due to cancer of the rectum.

The excess of deaths from cancer of the female generative and mammary organs reduces the proportions due to cancer of the other organs or parts, as compared with the proportions given for the males. If, however, cancer of those organs is excluded the death rate of males from other forms of cancer exceeds that of the females.

Table 11 divides the 17,296 deaths that occurred from cancer in the registration area according to the organ or part that was affected and according to sex and to color.

TABLE 10.—PROPORTIONS OF DEATHS FROM CANCER OF CERTAIN ORGANS.

Organ or Region of Body.	All Ages.			24-44 years.			45 64 years.			65 years and over.		
	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.
Abdomen	82.8	92.4	76.9	78.6	118.9	62.6	79.2	92.2	71.5	88.4	83.3	92.4
Bladder	13.5	25.3	6.2	5.8	6.3	5.6	12.3	22.8	6.0	19.3	34.7	6.9
Brain	2.0	2.6	1.7	4.4	4.7	4.3	1.1	1.6	0.7	1.4	2.0	0.8
Breast	....	7.5	157.8	....	11.0	151.9	....	7.8	157.8	....	6.1	162.4
Eye	1.3	2.4	0.7	....	....	....	0.3	0.4	0.2	2.5	4.6	0.8
Genitals	....	9.6	6.3	....	3.1	8.1	....	8.6	5.8	....	12.8	6.1
Head, face and neck	59.2	104.2	31.4	37.3	92.3	15.5	46.2	95.1	17.4	87.9	118.0	63.9
Larynx	4.9	10.8	1.3	4.0	7.8	2.5	5.4	13.1	1.0	4.8	9.2	1.2
Liver	133.4	145.6	125.9	112.3	159.6	93.6	133.7	151.4	123.3	143.2	132.4	151.9
Lower extremity	2.7	3.7	2.1	2.7	4.7	1.9	2.0	2.4	1.7	3.6	4.6	2.9
Lungs	5.5	6.1	5.1	4.9	6.3	4.3	7.4	8.6	6.7	2.9	3.1	2.9
Mouth, tongue and throat	46.8	95.5	16.8	25.3	67.3	8.7	45.4	98.3	14.2	59.6	101.2	26.5
Ovaries	....	....	9.7	....	....	16.7	....	....	8.9	....	....	5.3
Penis	....	3.9	....	....	4.7	....	....	3.7	....	....	3.6	....
Rectum	42.9	54.9	35.5	54.2	79.8	44.0	39.8	50.6	33.5	42.6	53.7	33.8
Stomach	315.6	430.6	244.7	249.6	427.2	179.2	318.8	441.4	246.4	348.0	422.6	288.7
Testicle	....	1.6	....	....	4.7	....	....	0.8	....	....	1.5	....
Upper extremities	1.9	3.3	1.1	1.3	1.6	1.2	0.9	1.2	0.7	3.9	6.6	1.6
Uterus	....	....	276.8	....	....	399.9	....	....	304.2	....	....	151.9

TABLE 11.

Situation.	Total.	Male.	Female.	White.		Colored.	
				M.	F.	M.	F.
Abdomen	1107	471	636	463	631	8	5
Bladder	180	129	51	125	49	4	2
Brain	27	13	14	12	14	1	...
Breast	1344	38	1306	36	1256	2	50
Extremities	62	36	26	33	25	3	1
Eye	18	12	6	12	6	..	..
Genitals	101	49	52	48	51	1	1
Head, face and neck	791	531	260	521	255	10	5
Kidney	90	41	49	40	47	1	2
Larynx	66	55	11	55	11	..	..
Liver	1784	742	1042	720	1024	22	18
Lungs	73	31	42	30	40	1	2
Mouth, tongue and throat	626	487	139	477	133	10	6
Ovaries	80	..	80	..	76	..	4
Penis	20	20	..	20	..	..	..
Rectum	574	280	294	271	279	9	15
Stomach	4220	2195	2025	2140	1964	55	61
Testicle	8	8	..	7	..	1	..
Uterus	2291	..	2291	..	2164	..	127
Not specified	3834	1250	2584	1223	2500	27	84

Cancer of the Breast.—The death rate per 100,000 population was much higher in the females (9.1) than in the males (0.3); it was also much higher for the age group 45 to 64 years (30.7) than at lower ages, and was still higher in those 65 years of age and over, females 59.6, males 2.0.

The death rate from this cause at all ages was higher in white females (9.1) than in colored females (7.9). Under 45 it was higher in the colored females (7.2) than in the white (3.9), but after that age it was higher in the whites. In white females from 45 to 64 years of age the death rate was about the same in the native born (30.3) and the foreign born (30.9). At 65 years of age and over the death rate for the same classes was higher, natives, 66.6; foreign born, 50.1.

Cancer of the Liver.—The returns indicate that the death rate at all ages was higher in females (7.2) than in males (5.2), and this difference was especially marked in those from 45 to 64 years of age, females 24.0, and males 17.1. As primary carcinoma of the liver is decidedly uncommon, the above figures are what one would naturally expect, inasmuch as the greatest number of cases of cancer occur in women between the years of 45 and 64. Consequently a higher rate of secondary involvement of the liver would occur.

Cancer of the Head, Face and Neck.—Of the total number of cases in this region 531 were in males and 260 in females. The death rate for this group was much higher in males (3.7) than in females (1.8), and was highest in persons 65 years of age and over, males 38.6 and females 23.5.

Cancer of the Mouth, Tongue and Throat.—This was three and a half times more frequent in men than in women. Of the 626 cases 57 occurred at 20 to 44 years, 300 at 45 to 64, and 263 at 65 and over. The death rates for both males and females were highest in the age group of 65 years and over, males 33.1, females 9.7. These results, together with those of the group immediately preceding, might be considered as further supporting the theory that chronic irritation is an important factor, particularly in the origin of superficial carcinoma. The natural conclusion would be that the greatest number of the above cases were of the squamous epitheliomatous type. This variety is in so many cases preceded by a history of chronic irritation that it would seem as if such an etiology must be taken into serious consideration.

Cancer of the Stomach.—A greater number of deaths than was brought about by carcinoma in any other situation arose from this cause. Out of the total number of deaths from cancer, 29,475, there were 4,220 due to carcinoma of the stomach, 13.9 per cent. The two sexes were practically equally involved, males, 2,195; females, 2,025. The death rate was very low in persons under 45 years of age, and was more than twice as high in persons of 65 years as in those between 45 and 64 years of age. In those 65 years and over it was higher in the males (138.3) than in females (105.9); much higher in whites (122.4) than in the colored (77.1), and higher among the foreign born whites (153.2) than among the native born whites (96.6).

Cancer of the Uterus.—Of all cases of carcinoma 2,291 deaths, constituting 7.9 per cent. of the total and 12.6 per cent of those occuring in women resulted from cancer of the uterus. The death rate in those from

20 to 44 years was 10.7. It was highest (59.1) in those from 45 to 64, but continued high (55.7) in those of 65 and over. It was much higher in the colored than in the whites of each group and it was higher in the native white at 45 to 64 years of age (59.6) than in the foreign white (55.5).

THE RELATION OF CANCER TO OCCUPATION.

The following list shows, for the registration states, the death rate from cancer in males per 100,000 of population engaged in the specified pursuits:

General average for all occupied males	57.1
Professional	51.7
Clergymen	102.2
Lawyers	52.5
Physicians	67.5
Clerical	37.3
Bookkeepers and clerks	28.0
Bankers, brokers	41.4
Collectors, auctioneers, and agents	58.1
Mercantile and trading	52.0
Merchants and dealers	81.3
Hucksters and peddlers	62.7
Public entertainment	35.3
Hotel and boarding-house keepers	60.1
Saloon and restaurant keepers	28.0
Personal service, police and military	42.9
Janitors and sextons	66.7
Policemen, watchmen and detectives	60.3
Laboring and servant class	66.5
Laborers other than agricultural	126.6
Servants	44.3
Manufacturing and mechanical industry	53.3
Bakers and confectioners	51.0
Blacksmiths	107.3
Cabinetmakers and upholsterers	72.6
Carpenters and joiners	77.7
Iron and steel workers	31.5
Machinists	52.2
Masons, stone and brick	98.0
Textile operatives	34.5
Painters	45.0
Tailors	58.4
Agricultural, transportation and other outdoor class	69.2
Draymen, hackmen, drivers, etc	22.6
Farmers, planters and farm laborers	87.7
Gardeners, florists, etc.	72.9
Stablemen	46.1
Miners and quarrymen	33.4
Sailors, fishermen, etc.	113.1
General average for occupied women	49.7
School teachers	47.8
Bookkeepers and clerks	15.1
Laundresses	25.3
Nurses and midwives	105.0
Servants	99.6
Textile operatives	9.9
Dressmakers	38.4

The percentage of death from cancer in relation to the entire number of deaths from all causes in the United States in the registration area and its subdivisions, is given in Table 12.

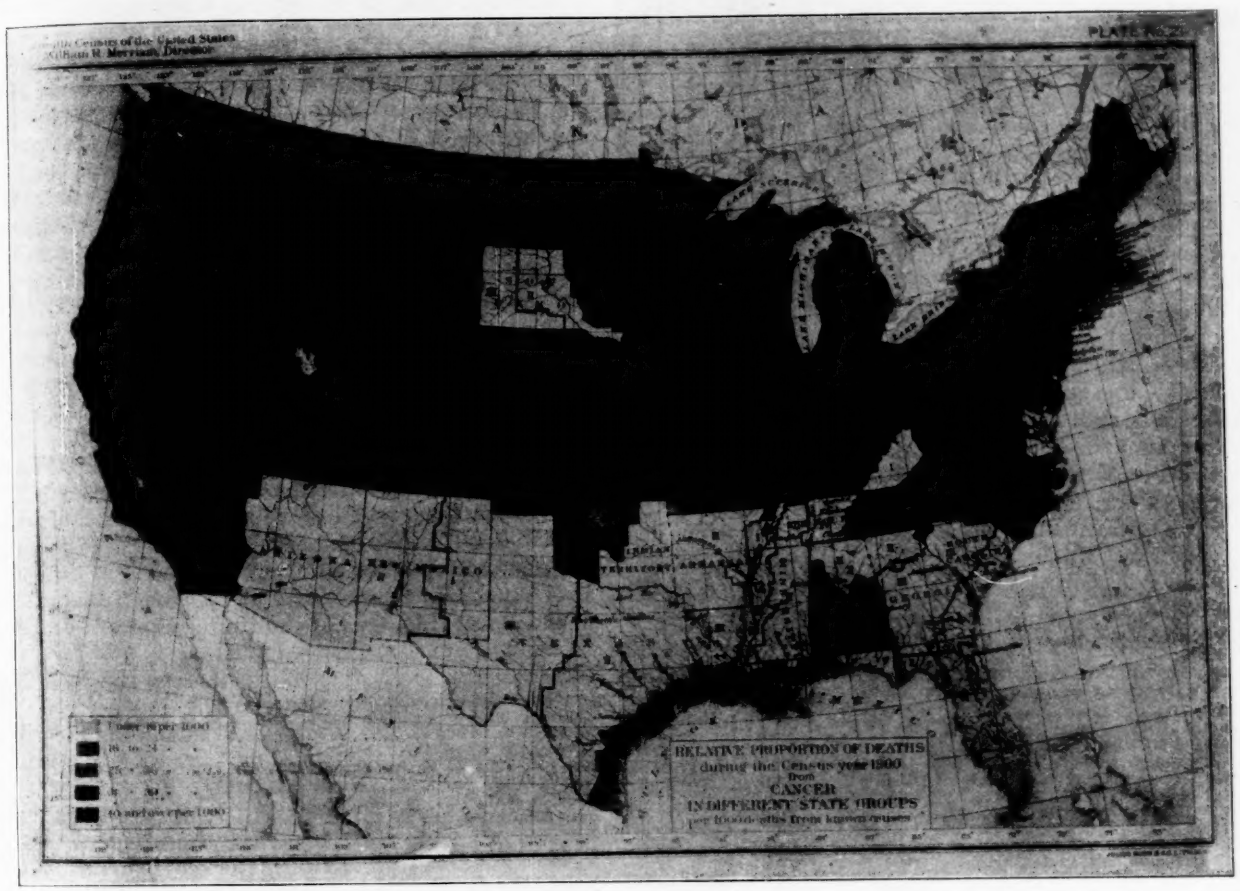

TABLE 12.

	White males, per cent.	Colored males, per cent.	Females, per cent.
In the United States	3.63	0.78	4.40
In the registration record	3.86	1.30	5.64
In the registration cities	3.71	1.34	5.37
In the registration states	3.8	1.36	5.97
Cities in registration states	3.5	1.54	5.86
Rural districts in registration states	4.2	0.65	6.61
Registered cities in other states	3.8	1.29	5.11
Non-registration record	3.3	0.60	3.22

THE GEOGRAPHICAL DISTRIBUTION OF CANCER AND TUMOR IN THE UNITED STATES.

Table 13 shows for each grand group in the United States the proportion of deaths from cancer and tumor, during the census year, per 1,000 deaths from known causes, in the aggregate and by sex, for the cities and rural districts.

According to this table the proportion of deaths due to cancer and tumor was greatest in the Pacific coast region, 51.9; in the heavily timbered region of the Northwest, 46.8; in the Northeastern hills and plateaus, 44.5; and in the Prairie region, 43. It was least in the Southern interior plateau, 18.1; in the Southwest central region, 15,8, and in the North Mississippi River belt, 11.3.

TABLE 13.—NUMBER OF DEATHS PER 1,000 DEATHS FROM KNOWN CAUSES.

Grand group.	Rural.			Cities.	
	Total.	Males.	Females.	Males.	Females.
Pacific Coast region	51.9	36.5	69.4	43.6	70.3
Heavily timbered northwest region	46.8	34.4	58.8	39.9	64.6
Northeastern hills and plateaus	44.5	33.8	65.1	24.4	47.9
Prairie region	43.0	36.4	50.3	33.2	60.2
Region of great northern lakes	41.6	37.3	57.1	30.6	49.7
North Atlantic coast region	41.5	34.3	67.9	23.4	52.3
North Mississippi River belt	37.3	29.7	46.7	27.0	49.8
Interior plateau	34.4	25.2	50.7	21.3	43.5
Central Appalachian	34.4	26.8	48.2	18.3	44.4
Ohio River belt	34.2	24.4	39.8	26.4	50.7
Central region, plains and prairies	34.1	25.1	42.9	22.9	49.9
Cordilleran region	32.1	25.7	41.5	31.3	40.8
Missouri River belt	31.0	27.2	37.3	24.2	35.8
Middle Atlantic coast region	31.0	20.9	39.2	21.2	42.9
Region of western plains	26.5	19.9	32.9	26.7	42.4
Gulf coast	20.2	13.1	25.3	15.0	30.9
Southern Central Appalachian	20.0	13.5	26.8	6.5	30.6
South Atlantic coast region	18.7	10.2	25.2	10.5	32.3
Southern plateau region	18.1	9.1	26.8	...	...
Southwest central region	15.8	12.7	18.7	22.7	25.8
South Mississippi River belt	11.3	6.3	12.5	12.2	30.7

Reviewing certain of the United States census statistics, a writer[1] says: "The question of nationality will be found to furnish an explanation of the very high mortality in those states in which the greater number of immigrants from Europe make their home." It also states that "it is obvious that the Atlantic states, which receive every year a mass of immigrants from Great Britain and Germany would be expected to show from this cause alone a distinctly higher cancer rate than those inhabited by native born population." Unfortunately such reasoning is not supported by the facts. By comparing certain of the grand groups, according to their proportion of native born, we find the conditions set forth in Table 14.

TABLE 14.

Grand group.	Deaths from cancer per 1,000 deaths.	Native white.	Foreign white.
Pacific coast region	51.9	73.7	21.7
Heavily timbered northwest region.	46.8	76.6	22.1
Northeastern hills and plateaus.	44.5	79.0	20.3
Prairie region	43.0	84.0	14.3
Region of great northern lakes	41.6	70.6	28.3
North Atlantic coast	41.5	about 75.0	about 23.6
North Mississippi River belt	37.3	79.2	17.3
Interior plateau	34.4	76.7	12.2
Ohio River belt	34.2	87.8	6.5
Central region, plains and prairies	34.1	87.8	4.4
Cordilleran region	32.1	76.8	16.8
Middle Atlantic coast	31.0	65.0	25.2
			Colored.
Gulf coast region	20.2	55.4	38.6
South Central Appalachian	20.0	84.7	...
South Atlantic coast	18.7	...	53.0
South interior plateau	18.1	46.3	53.4
South Mississippi River belt	11.3	32.9	65.9

From this table it is seen that the two regions that have the greatest per cent. of foreign population occupy respectively the fifth and twelfth positions as regard the cancer death rate. Again the South Carolina Appalachian region is the fourth lowest and its population is composed of 84.7 per cent. native white; on the other hand the native white population of the Prairie region is 84 per cent. and it is the fourth highest. In the Southern states where the colored population is very great the average cancer rate is the least. This is a condition to be expected, knowing the lesser mortality in that race from cancer. Hyde in a recent article concludes that, "Physiological pigmentation of the skin seems to furnish relative immunity against cancer of that organ;" and also, that "The colored races apparently suffer less than the whites from cancer of other organs than the skin. This relative immunity may be due to the protection from actinic rays of light furnished by the pigment of the integument." It would seem evident from Table 14 that the death rate from cancer in the different parts of the United States has no direct relation to the number of foreign whites in the population.

By an examination of a cancer map of the United States one's attention is immediately attracted by the fact that, with the one exception of California, the area is divided into two great divisions in regard to the mortality per 1,000 deaths from known causes. South of the latitude of 37° the number of deaths from cancer is under 16 per 1,000. This includes Arizona, New Mexico, Texas, Indian Territory, Arkansas, Mississippi, Louisiana, South Carolina, Georgia and Florida, the Western end of Tennessee and the Northern end of Alabama. In the following areas the death rate is a little higher, from 16 to 24, the coast line of Texas, Louisiana, Mississippi, the Southern part of Alabama and Oklahoma. Above the latitude of 37° the cancer mortality in that portion between the Missouri River and California and the Western half of Washington and Oregon varies from 25 to 39 per 1,000 deaths. East of the Missouri River to the Atlantic Coast the mortality is generally from 31 to 40 and over.

GENERAL SUMMARY.

In the registration area in 1890 cancer was thirteenth in the list of causes of death and the death rate was 47.9 per 100,000 of population. In 1900 it had moved up to seventh, with a death rate of 60.0.

In the United States in 1900 the proportion of deaths from cancer in 1,000 deaths of known causes was 29.5. In 1890 the corresponding proportion was 22.5. In England and Wales the death rate in 1899 was 82.9, an increase of 15.3 per 100,000 from 1890 to 1899 as against a corresponding increase of 12.1 between 1890 and 1900 in the registration area of the United States.

TABLE 15.—DEATH RATE PER 100,000 OF POPULATION.

	1900.	1890.
Rural district of registration states	71.4	56.0
Cities in non-registration states	63.0	48.2
Among the white	66.7	53.9
Among the colored	47.7	36.7
Native whites of native parents	66.9	58.6
Native whites of foreign parents	25.7	17.9
Foreign whites	124.6	93.3
Females, white	83.2	69.0
Females, colored	66.2	53.6
Males, white	50.1	38.8
Males, colored	28.6	19.2
Males	36.9	...
Females	63.1	...
Average age at death from cancer	58.1	57.2

Mortality greatest at 65 years, and at this age was higher in females than in males.

The death rates were highest in those whose mothers were born in Russia, Scotland and Germany; and lowest in those born in the United States, Hungary and Poland.

According to conjugal condition and age the death rate from 15 to 44 years of age was higher in the married of both sexes than in the single. Above 44 years the rate for the single was higher in both sexes than for the married. At 65 years and over it was higher in the single of both sexes than in either the married or widowed.

In each 1,000 deaths of males of all ages from definitely located cancer:

430.6 were due to cancer of the stomach.
145.6 were due to cancer of the liver.
104.2 were due to cancer of the head, face and neck.
95.5 were due to cancer of the mouth, tongue and throat.
92.4 were due to cancer of the abdomen.
54.9 were due to cancer of the rectum.

In females:

276.2 were due to cancer of the uterus.
244.7 were due to cancer of the stomach.
157.8 were due to cancer of the breast.
125.9 were due to cancer or the liver.
76.9 were due to cancer of the abdomen.
35.5 were due to cancer of the rectum.

1. British Medical Journal, May 2, 1903.

When the occupations are compared there are seen to be great variations in the cancer mortality. With one exception, to be mentioned later, the greatest mortality from cancer occurs in those who do hard work out of doors. Leading the list with a rate of 126.6 come the laborers other than agricultural, then sailors and fishermen 113.1, blacksmiths 107.3, masons 98.0, and farm laborers 87.0. The one exception is the average for clergymen, 102.2. This may possibly be explained by the fact that this class commonly attains a higher average age than most of the other classes. It would seem that there is some direct relation between occupation and cancer mortality. It is difficult to say what it has to do with hard work and exposure unless it has a bearing on the theory of chronic irritation. Before that point could be argued it would be necessary to know the location of the new growths.

A point against the theory of alcohol having something to do with cancer is that the average in those of the public entertainment class is 35.3. This is the lowest of all the groups. The average under this heading for saloon and restaurant keepers is only 28.0. If the consumption of beer or other alcoholic drinks had anything to do with the disease a higher average should be found.

It can also be shown that the consumption of beer has no direct influence on cancer rate by comparing the rates in certain of the cities that are largely inhabited by Germans and that are centers of brewing. In Milwaukee the rate per 1,000 deaths was 52.5, in Cincinnati 44.5, and in St. Louis 40.3. These cities come below San Francisco 58.7, Syracuse 57.2, Springfield 56.2, Hartford 53.9 and others, and are about equal to that of Detroit 49.4, Los Angeles 47.6, Buffalo 47.0, and New Haven 46.8.

The opinion of certain investigators that cancer is more common along the banks of rivers or streams is not well sustained by the figures. Those sections in the United States along the various great rivers, as the Mississippi, Missouri, Ohio, Rio Grande and numerous others, have, with a few exceptions, a lower mortality than the other parts of the country. The only points in common in the widely scattered areas of high mortality are that these regions are generally hilly or mountainous and are both well timbered and well watered by many streams and lakes.

The increase in cancer mortality in immigrants in the United States as compared with the rate in their own country may very readily be an apparent and not a real one. Those who come to this country are adults as a rule and consequently have a higher cancer death rate than the average of all ages. The only way in which comparisons of value could be made would be to compare the death rate of a large number of immigrants of a certain age with a corresponding number of similar age in their native country.

CONCLUSIONS.

1. That cancer appears to have actually increased in the United States 12.1 deaths per 100,000 population in the past ten years.
2. That the death rate is higher in the rural districts and small towns than in the cities.
3. That native whites suffer much less than the foreign whites.
4. That the death rate amongst the foreign whites in the United States is only apparently greater than in their own homes.
5. That 63.1 per cent. of all cancer cases are in women and 36.9 per cent. in men.
6. That those employed in hard outdoor work have a higher cancer mortality than the sedentary classes.
7. That the areas showing the greatest mortality are mountainous regions that are well watered and timbered.
8. That cancer does not seem to be generally more prevalent along rivers.
9. That those cities in which there are both a large German population and large brewing interests do not show a corresponding increase in cancer mortality.
10. That cancer mortality is greatest in persons of 65 years and over.
11. That the average age at death is 58.1 years.

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Special Article

THE PHARMACOPEIA AND THE PHYSICIAN.

CHAPTER XVIII.

GENERAL TONICS.

Tonics are defined by Gould as "medicines or agents which promote nutrition and give tone to the system."

Since these conditions are met by any improvement in the general health, the use of the term is often an admission of our want of exact knowledge of the mode of action of the drugs or remedies so classed.

Strychnin increases the reflexes and may thus improve the muscular tone. Bitters may increase the impaired appetite and digestion, which will, of course, improve the general condition, hence these agents may be spoken of as tonics; and, if we were not acquainted with the organism which causes malarial fever, and with the effect of quinin on that organism, but merely knew that this condition was relieved by quinin, we would be justified in attributing the action to the tonic effect of quinin. Therefore, as our knowledge of the exact mode of action of the various remedies of this group increases, the importance of the term itself will correspondingly decline.

Among the tonics we may include stomachics (which have been discussed in Chapter XIV); hematinics, or agents which assist in the regeneration of blood, including iron, arsenic, cod-liver oil and hypophosphites; and the alteratives, the mode of action of which is unknown.

Hematinics.

Ordinary food is the most important of the hematinics, if, indeed, we have any others which are of considerable importance, especially if we accept the definition which includes iron in any assimilable form as food.

IRON.

Most of the iron in the body, amounting to from 2½ to 3 grams (38 to 45 grains) occurs as a constituent of hemoglobin, an extremely complex substance in which the iron is much more firmly bound than in the ordinary iron albuminate. In addition to that found in the blood, iron is an important constituent of the body cells, though present only in very minute quantity.

The animal body is generally supposed to be incapable of building up complex organic molecules from elementary substances, and it seems more than probable that all the iron in the hemoglobin is derived from the vegetable kingdom, and that inorganic salts of iron do not take part directly in its formation, though they may influence it markedly.[1]

The absorbability of inorganic iron was not questioned before the investigations of Kletzinsky, about fifty years ago, and it is even more recently that the subject began to attract considerable attention, but the literature at the present time is rather extensive and many contradictory results have been obtained.

It is perfectly obvious that iron as it exists in vegetables is capable not only of being absorbed, but of being utilized in

1. Prior to the discovery by Wöhler of the synthesis of such a comparatively simple substance as hippuric acid in the kidney, it was supposed that no synthesis could occur in the animal body.

the formation of hemoglobin, and it is only when the appetite or digestion is greatly impaired that there can ever exist any marked deficiency in the supply of iron, only about 10 milligrams (1/6 grain) being required daily under ordinary conditions, but there may arise the necessity for a stimulation of the function concerned in the utilization of the iron taken in the food; if inorganic iron stimulates this function, and it apparently does under certain conditions, then it acts as a medicine.

Many efforts have been directed toward determining whether iron, other than that existing in the food, is absorbed from the alimentary canal. Attempts to measure the difference between the amount ingested and that excreted proved inconclusive. Iron is probably excreted into the intestine after absorption, though Tartakowsky doubts if the iron found in the intestinal epithelium is in course of excretion, and the amount excreted often considerably exceeds that administered.

Microchemic means have been employed to solve the problem, and A. B. MacCallum has found that only a slight degree of absorption in the first few inches of the duodenum follows the administration of small doses of inorganic iron, nearly all being precipitated by the mixed chyme, pancreatic juice and bile, but when large doses are taken absorption appeared to take place through the whole length of the small intestine, while Tartakowsky found that inorganic iron was also absorbed from the rabbit's stomach.

MacCallum found that iron, in the form in which it exists in yolk of egg, is absorbed, while Marfori's albuminate and the commercial peptonate seemed to stimulate the leucocytes to invade the epithelial layer of the villi in the guinea-pig, but many investigators now believe that absorption occurs mainly by way of the lymph channels and not by the blood.

Since iron, like any other foreign substance, may be excreted without having been utilized after absorption, the question is not one of absorption alone, but of the form in which iron must be absorbed in order that it may take part in the formation of hemoglobin, and be utilized in the body cells.

In addition to the food irons, the assimilation of which it is not necessary to discuss at present, certain other forms have been found capable of being converted into hemoglobin, and we may say that many physiologic chemists believe that there is no reason to suppose that inorganic salts of iron are not as readily assimilated as are the organic, and Tartakowsky does not believe that even the food irons are absorbed in the form of the complex combinations in which they exist in plants.

Socin, working in Bunge's laboratory, proved that iron, in the form in which it exists in yolk of egg (hematogen, as it is called by Bunge, who isolated it), is capable of assimilation. He fed this, and no other form of iron, to mice for a period of 100 days, during which time they gained in size and weight without becoming anemic.

Bunge considers that hematogen is the undoubted precursor of hemoglobin, but his views have not been universally accepted. Hematogen, according to the investigations that have been made by Bunge, is more stable than the combinations of iron that are found in vegetables and it is also more easily isolated.

Schmiedeberg isolated an organic iron compound, which he named ferratin, from the liver, and which he considers the true precursor of hemoglobin. Ferratin may be prepared synthetically from an alkaline solution of albuminate of iron, and is usually considered merely as an ordinary albuminate, but Schmiedeberg strongly insists that it is iron-acid-albumin, and calls attention to certain chemic differences between it and the ordinary albuminate. Marfori isolated the compound containing 0.7 per cent. of iron, but as most easily prepared it contains from 4 to 8 per cent., which strongly suggests that the precipitate carries down mechanically some other form of iron.

The examples quoted serve to show the diversity of opinion among authorities as to the actual precursor of hemoglobin, but the question is of less therapeutic importance than it would seem at first thought, in view of the fact that it is a comparatively infrequent occurrence that a patient is unable to take a sufficient amount of iron in the food. We have devoted so much space to the subject mainly because the manufacturers of certain nostrums, used as hematinics, are prone to quote such results as those obtained in Bunge's laboratory only so far as they show that organic iron preparations are assimilable while the inorganic are not, but we have not yet seen any mention made in the free circulars of the statement made by Bunge that inorganic iron does stimulate the functions concerned in the assimilation of iron when it is abundant in the food, and that organic iron preparations are without beneficial effect under similar conditions.

This, however, is of the very greatest importance from a practical point of view, because we can nearly always select a suitable diet containing an abundance of iron, and organic iron in any other shape is, therefore, seldom if ever required.

As evidence of the rôle played by inorganic iron we may mention the results obtained by Abderhalden.

He found that the iron of hematin and hemoglobin is not so readily assimilated as is that of the ordinary food. Animals were fed on a diet in which a deficiency of iron was made up by hematin and hemoglobin, and they did not thrive so well as those which received food containing a sufficiency of iron, though those which received hematin and hemoglobin did thrive better than those in which the deficiency was made up by an inorganic iron. This might be easily considered as conclusive proof of the value of organic iron nostrums, but when we repeat that it rarely happens that the patient can not take food containing an abundance of iron the fact loses most of its significance.

When the food was rich in iron the addition of hematin and hemoglobin (which may be considered the best type of organic iron) had no effect on the assimilation of the food iron, but when inorganic iron was added to such iron-rich food the assimilation was stimulated.[2]

When inorganic iron is added to the food or to organic iron, it combines with the hydrogen sulphid in the intestine and spares the organic iron from precipitation. Inorganic iron should thus prove beneficial even if Schmiedeberg were correct in contending that inorganic iron is not absorbed from the intestine except after corrosion of the mucous membrane. He claims that corrosion occurs even when such a salt as ferric chlorid is administered after free dilution, because the water is rapidly absorbed, leaving the salt in concentrated solution.

Other investigators have also called attention to the corrosive action of hydrochloric acid when liberated from a metallic salt in contact with the tissues, and it may be found that the ferrous sulphate or carbonate may be found to be preferable to the more widely used ferric chlorid.

OFFICIAL PREPARATIONS OF IRON.

The list of official preparations of iron is a long one and comprises a number of substances that are not generally used as hematinics.

The use of the salts of iron as astringents has been referred to in Chapter XIII, and need not be recapitulated at this time more than to enumerate the preparations that may be so used.

Among the official preparations that are useful as astringents or as styptics are the following:

LIQUOR FERRI TERSULPHATIS and LIQUOR FERRI SUBSULPHATIS.—U. S.—The solution of ferric subsulphate, in addition to being used as an astringent and styptic, has also been recommended as a hematinic.

Average dose: 0.2 c.c. (3 minims).

FERRI CHLORIDUM and LIQUOR FERRI CHLORIDI.—U.S.—These were both more fully discussed under astringents, Chapter XIII.

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2. Cushny: "Pharmacology and Therapeutics" says: "The words organic and inorganic in connection with these preparations have no reference to the combination to which iron is attached, but to the method of attachment. Thus the acetate and albuminate of iron are both classified among the inorganic iron compounds, because they are capable of dissociation, and the iron is precipitated by ammonium sulphid. Masked iron is a preferable term for organic iron, but has not been so widely used. A large number of the proteid compounds that have been introduced in the last few years promise to be relegated to merited oblivion in the near future. The albuminate of iron and the peptonate of iron are generally prepared by the action of the chlorid on egg albumin or on peptone, and differ very considerably in the percentage of iron. These preparations are not organic iron in the sense defined above, for the iron can be split off easily, and is precipitated by sulphids almost as readily as the ordinary salts."

Probably the most widely used of the several preparations of iron, is:

TINCTURA FERRI CHLORIDI.—U. S.—This preparation contains 35 per cent. by volume of solution of ferric chlorid and should be prepared at least three months before being used. Tincture of ferric chlorid, or tincture of iron, as it was formerly called, has long been considered one of the most efficient of the inorganic iron preparations.

Average dose: 0.5 c.c. (8 minims).

FERRI SULPHAS and FERRI SULPHAS GRANULATUS.—U. S.—These differ only in the size of the crystals; they consist of ferrous sulphate containing 7 molecules of water of crystallization. Ferrous sulphate is soluble in less than one part of water, but is insoluble in alcohol.

Average dose: 0.2 gm. (3 grains).

FERRI SULPHAS EXSICCATUS.—U. S.—Exsiccated ferrous sulphate is a grayish-white powder that is slowly but completely soluble in water. About 65 grams of the exsiccated preparation are equivalent to 100 grams of the granulated.

Average dose: 0.12 gm. (2 grains).

PILULÆ ALOES ET FERRI.—U. S.—Each pill contains 0.07 gm. (about 1 grain) each of exsiccated ferrous sulphate, purified aloes and aromatic powder.

Average dose: 2 pills.

PILULÆ FERRI CARBONATIS.—U. S.—This preparation is variously known as Blaud's pills, Griffith's pills or Vallet's pills. Each pill contains about 0.06 gm. (1 grain) of ferrous carbonate, with potassium sulphate, althea tragacanth and glycerin.

Average dose: 2 pills.

FERRI CARBONAS SACCHARATUS.—U. S.—The saccharated carbonate of iron should contain not less than 15 per cent. of ferrous carbonate.

Average dose: 0.25 gm. (4 grains).

MASSA FERRI CARBONATIS.—U. S.—Mass of ferrous carbonate, better known as Vallet's mass, contains nearly 5 per cent. of ferrous carbonate.

Average dose: 0.25 gm. (4 grains).

MISTURA FERRI COMPOSITA.—U. S.—Compound iron mixture, or Griffith's mixture, is much more popular in England than in this country. It contains freshly precipitated ferrous carbonate suspended in a mixture of potassium sulphate, myrrh, syrup, spirit of lavender and rose water.

Average dose: 16 c.c. (4 fluidrams).

Of the several official preparations containing ferrous carbonate the pill of ferrous carbonate, more generally known as Blaud's pill, is probably the most efficient and most satisfactory. This pill should be freshly prepared and should not contain free or unchanged ferrous sulphate or potassium carbonate. The practice that has been adopted by some manufacturers of massing these pills without allowing the chemical reaction to take place is a reprehensible one, as it is not at all probable that the necessary reaction will take place as readily in the acid medium of the stomach as it would in a test-tube or mortar.

All the preparations of ferrous carbonate have the decided advantage over the previously mentioned preparations of iron that they are not astringent and, therefore, are not likely to cause digestive disturbances.

Another preparation that is free from the objectionable feature of being astringent is:

FERRUM REDUCTUM.—U. S.—Reduced iron occurs as a fine grayish-black lusterless powder without odor or taste. It is insoluble in water or in alcohol and, therefore, is generally directed to be dispensed in powders, capsules or pills.

Average dose: 0.05 gm. (1 grain).

SCALE SALTS OF IRON.

FERRI CITRAS.—U. S.—The ferric citrate occurs in thin garnet-red scales that are slowly but completely soluble in water.

Average dose: 0.25 gm. (4 grains).

FERRI ET AMMONII CITRAS.—U. S.—Iron and ammonium citrate is much more freely soluble in water than the simple citrate, and has the added advantage that it is not likely to lose this property on keeping.

Average dose: 0.25 gm. (4 grains).

FERRI ET AMMONII TARTRAS.—U. S.—This occurs in thin transparent scales varying in color from garnet red to reddish brown. It is freely soluble in water but insoluble in alcohol.

Average dose: 0.25 gm. (4 grains).

FERRI ET POTASSII TARTRAS.—U. S.—This is very similar in physical properties to iron and ammonium tartrate.

Average dose: 0.25 gm. (4 grains).

FERRI ET QUININÆ CITRAS.—U. S.—Iron and quinin citrate contains about 11.5 per cent. of quinin and ferric citrate corresponding in amount to 13.5 per cent. of metallic iron. It is slowly but completely soluble in water.

Average dose: 0.25 gm. (4 grains).

FERRI ET QUININÆ CITRAS SOLUBILIS.—U. S.—This preparation has practically the same composition as iron and quinin citrate, but with ammonium citrate present to insure its ready and complete solubility.

Average dose: 0.25 gm. (4 grains).

FERRI ET STRYCHNINÆ CITRAS.—U. S.—Iron and strychnin citrate contains about 1 per cent. of strychnin. It is readily and completely soluble in water.

Average dose: 0.12 gm. (2 grains).

These several scale preparations of iron are comparatively free from astringent properties, are generally freely soluble in water or in aqueous liquids, do not attack the teeth, and are not obnoxious to the taste. They are preferably directed to be dispensed in aqueous solution, with or without the addition of elixir or some other flavoring admixture.

LIQUID PREPARATIONS OF IRON.

VINUM FERRI.—U. S.—This contains 4 per cent. of iron and ammonium citrate with syrup and white wine, flavored with tincture of sweet orange peel.

Average dose: 8 c.c. (2 fluidrams).

VINUM FERRI AMARUM.—U. S.—This preparation contains 5 per cent. of soluble iron and quinin citrate with syrup and white wine, flavored with tincture of sweet orange peel.

Average dose: 8 c.c. (2 fluidrams).

GLYCERITUM FERRI, QUININÆ ET STRYCHNINÆ PHOSPHATUM.—U. S.—The glycerite of the phosphates of iron, quinin and strychnin contains 8 per cent of the soluble ferric phosphate, 10 per cent. of quinin and 0.08 per cent. of strychnin with phosphoric acid, glycerin and water.

Average dose: 1 c.c. (15 minims).

SYRUPUS FERRI, QUININÆ ET STRYCHNINÆ PHOSPHATUM.—U. S.—This syrup contains 25 per cent. of the glycerite of the phosphates of iron, quinin and strychnin in syrup.

Average dose: 4 c.c. (1 fluidram).

ELIXIR FERRI, QUININÆ ET STRYCHNINÆ PHOSPHATUM.—U. S.—This popular ferruginous bitter tonic contains soluble ferric phosphate, quinin and strychnin. The average dose—4 c.c. (1 fluidram)—contains nearly 0.07 gm. (1/16 gr.) of soluble ferric phosphate, 0.035 gm. (7/12 gr.) of quinin, and 0.001 gm. (1/60 gr.) of strychnin.

Average dose: 4 c.c. (1 fluidram).

LIQUOR FERRI ET AMMONII ACETATIS.—U. S.—This solution of iron and ammonium acetate, more popularly known as Basham's mixture, contains a double salt of iron and ammonium acetate and is directed to be made by mixing 4 parts of tincture of ferric chlorid, 6 parts of diluted acetic acid, 50 parts of solution of ammonium acetate, 12 parts of aromatic elixir, 12 parts of glycerin and a sufficient quantity of water to make 100 parts. This preparation being quite dilute, is not very stable and should be freshly prepared when wanted.

Average dose: 16 c.c. (4 fluidrams).

There are two additional preparations of iron that, while they are not prescribed as hematinics, might well be mentioned in this connection.

ANTIDOTES FOR ARSENIC.

FERRI HYDROXIDUM.—U. S.—This is the hydrated oxid of iron of the previous Pharmacopeia and is directed to be made by precipitating 100 parts of solution of ferric sulphate with 133 parts of ammonia water that has been diluted with 1,000 parts of cold distilled water. The resulting precipitate is directed to be washed until free from soluble sulphates. This preparation is not particularly adapted for extemporaneous preparation, and, as it does not keep well, the following has been added as an efficient, extemporaneous antidote for arsenic.

FERRI HYDROXIDUM CUM MAGNESII OXIDO.—U. S.—This is directed to be made by diluting 40 parts of solution of ferric sulphate with 125 parts of water, and kept in a large well-stoppered bottle. The magnesia mixture is directed to be made by rubbing 10 parts of magnesium oxid with sufficient water to make a smooth and thin mixture, then diluting it to about 700 parts. When wanted for use the magnesium oxid mixture is to be well shaken and then gradually added to the solution of ferric sulphate and the resulting mixture again well shaken.

Average dose: Arsenical antidote, 120 c.c. (4 fluidounces).

INDICATIONS FOR IRON.

Hematinics are demanded when the amount of blood or of any of its essential constituents have been greatly reduced.

After severe hemorrhage involving the loss of less than half the blood, regeneration takes place rapidly, if the general condition of the patient is otherwise good and the food ample.

In accordance with a vast amount of clinical experience and the results obtained by many investigators medicinal iron (if we may use the term) is indicated. If the patient is able to take an abundance of food rich in iron, inorganic iron alone may suffice, but if he is unable to digest such food, then hematin and inorganic iron should both be given.

Iron has long been used in chlorosis, and experience has shown that it is more useful in those forms of anemia in which the loss of hemoglobin is greater than that of red blood cells; in other words, when the red blood cells present, whether in normal or diminished number, are indiviually poor in hemoglobin.

As to the form of iron to be given, of first importance is the selection of food. Reference to the table given below, selected from Bunge's Physiology,[3] will enable the physician to compute approximately the amount of food iron which the patient is receiving, and by computing the daily normal loss at 10 milligrams he can see about how much of this is left for the regeneration of hemoglobin. The figures given are for dried material, and it is to be remembered that green vegetables may lose 75 per cent. or more of their weight on drying, while fatty substances (nuts) will lose but little.

If the food contains an insufficiency of iron hematin should be added, but if the food supply is abundant one of the inorganic forms of iron will prove beneficial. In our choice of medicinal iron we must be guided by the individual case in selecting the one which causes the least disturbance of the digestion. In the absence of fever it will seldom occur that the patient can not take a selected diet containing an ample supply of iron. If the appetite and digestion are deficient stomachics are indicated.

Inorganic iron very often gives better results in the first few weeks of the administration than it does later, which may possibly be explained by its interference with the digestion—a matter to be guarded against carefully. Large doses, if they do not disturb the digestion, are often required.

Bunge distinctly warns the physician against using high-priced pharmaceutical preparations of iron and calls attention to the advantage of beef, blood sausage and blood.

While warm blood may be tolerated by some individuals, the aversion to it is frequently unconquerable and hematin seems to be equally serviceable in any case.[4]

The etiology of some of the anemias is so obscure that treatment must be mainly empirical, but we may feel reasonably certain that we shall do more harm than good if we depend on the nostrums so glowingly advertised instead of directing our efforts toward improving the appetite and digestion. The selection of a proper diet, together with proper doses of inorganic iron in most cases, or of organic and inorganic iron in comparatively few cases in which they are needed, will usually be found to be all that is required.

When iron tends to cause constipation laxatives must be employed, preferably one of the preparations of cascara sagrada, or the pills of aloes and iron, one of which may be given three times daily.

As examples of the innumerable combinations in which iron may be prescribed we give the following:

℞. Ferri sulphatis exsic.....3i 4
Extracti nucis vom.
Extracti rhamni pursh, āā.....gr. xv 1

M. Ft. pil. No. lx. Sig.: One pill half an hour after meals.

Reduced iron or ferric citrate, may be substituted for the dried ferrous sulphate, and a slightly larger amount of aloes (20 grains—1.3 gm.) can be used in place of the extract of cascara sagrada. Clinical experience seems to show that a formula of this kind is not so useful in those conditions in which there is a deficiency of hydrochloric acid in the gastric secretions; in such cases small doses, from half to one teaspoonful, of the solution of iron and ammonium acetate may be given, after meals. This preparation rarely gives rise to constipation or other symptoms of indigestion.

The pills of ferrous carbonate, Blaud's pills, may be given either alone or the mass of ferrous carbonate, which is practically identical, may be used in combination with such a laxative as the extract of cascara sagrada, in the dose mentioned above. If desirable a bitter substance such as the extract of nux vomica may also be included as follows:

℞. Massa ferri carbonatis.....3ii 8
Extracti nucis vom.
Extracti rhamni pursh, āā.....gr. xv 1

M. Ft. pil No. lx. Sig.: One pill half an hour after eating.

Other bitter extracts, or other bitter substances, such as quinin or strychnin, and other laxatives may be substituted for those given above. A representative formula for a pill of this general composition would be as follows:

℞. Ferri reducti
Quininæ sulphatis
Aloe purificat, āā.....gr. xlv 3
Strychninæ sulph.....gr. i 06

Ext. gentian q. s. Ft. mass et dividenda in pil. No. lx. Sig.: One pill three times a day, after eating.

While it is true that the salts of the alkaloids might better be substituted by the alkaloids themselves, the amount of acid present is so small that it is really of very little moment.

In this same connection it might be pointed out that the dried ferrous sulphate or the ferric citrate may be substituted for the reduced iron, or, by omitting the extract of gentian, the mixture may be directed to be dispensed as a powder in capsules.

The tincture of ferric chlorid is best given well diluted with water, a glass tube being used to prevent the corrosive action of the acid on the teeth, and the mouth should then be well rinsed with water, or a dilute solution of an alkali such as lime water.

The scale salts of iron, being, generally, combinations with organic acids, are much less corrosive than the chlorid, or either of the sulphates, and may frequently be used with advantage in their stead. A representative formula for a simple solution of this kind would be as follows:

℞. Ferri et ammonii citratis.....3i 4
Aquæ dest. .....fld. 3xii 50
Elixir q. s. ad.....fld. ℥iii 100

M. Sig.: One teaspoonful three times a day, before eating.

Any one of the soluble scale salts of iron can be substituted for the iron and ammonium citrate, and one of the aromatic waters can be used in place of the distilled water, or of the water and the elixir.

The bitter wine of iron, given a few minutes before meals, is an excellent ferruginous stimulant of the appetite and digestion which women will usually find acceptable.

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3. The following table, taken from Bunge's Physiology, gives the iron content in milligrams per 100 grams of the dried substance. Such substances as grapes will evidently yield but little iron, since they consist mainly of water.

Sugar	0.0	Cabbage (dark green leaves)	17.0-30.0
White of egg	0.0	Almonds (blanched)	4.9
Rice	1.0-2.5	Almonds (whole)	9.5
Barley (hulled)	1.4-1.5	Grapes (Malaga)	5.6
Barley (whole)	4.5	Potatoes	6.4
Oranges	1.5	Peas	6.2-6.6
White bread (wheat)	1.5	Beans (white)	8.3
Apples	1.9	Carrots	8.6
Cow's milk	2.3	Dandelion leaves (used as salad)	14.3
Human milk	2.3-3.1	Beef	16.9
Figs	3.7-4.0	Asparagus	20.0
Hazel nuts (blanched)	4.3	Yolk of egg	10.0-24.0
Hazel nuts (whole)	12.7	Spinach	33.0-39.0
Rye	3.7-4.9	Blood of swine	226.0
Cabbage (etiolated)	4.5		
Cabbage (light green leaves)	5.6		

4. A practical method for the economic preparation of a hematin product was described by Torald Sollmann, in the Am. Jour. of Phar., June, 1902, p. 275.

Clinical Notes, New Instruments, Etc.

A PROTOZOÖN GENERAL INFECTION PRODUCING PSEUDOTUBERCLES IN THE LUNGS AND FOCAL NECROSES IN THE LIVER, SPLEEN AND LYMPHNODES.

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On Dec. 7, 1905, while examining smears from the lungs, spleen and bone marrow in a case that appeared to be miliary tuberculosis of the lungs, I found enormous numbers of small bodies generally oval or round. Most of them were intracellular in alveolar epithelial cells, while others appeared to be free in the plasma of the spleen and rib marrow. Tubercle bacilli were absent. The following is an account of the case:

Patient.—C. D., negro from Martinique, aged 27, occupation carpenter; address, Paraiso, a village in the Canal Zone.

History.—The patient had been a resident of the zone three months. While in Martinique he had suffered from some mental disturbance. His present illness dates from Sept. 15, 1905, when he complained of fever and vomiting.

Condition on Admission to Hospital.—On entering Ancon Hospital Dec. 5, 1905, he was mildly delirious and incoherent. Lungs were clear; abdomen was scaphoid; spleen was enlarged.

Blood: Negative for malarial parasites. leucocytosis, 2200.

Hemoglobin: 60 per cent. (Dare's).

Feces: Negative.

Temperature: On admission, Dec. 5, 12:30 p. m., 101, pulse 120; Dec. 6, 8 a. m., 95, pulse 96; 4 p. m., 98, pulse 100.

The patient died Dec. 6 at 11:30 p. m.

AUTOPSY.

December 7, 8:30 a. m.

Macroscopic and Microscopic Examination.—Body of negro, moderately emaciated; length, 5 feet 8¾ inches; inter nipple distance, 7 3/16 inches; rigor mortis was plus.

The odor on opening thorax was suggestive of pulmonary tuberculosis. The right and left pleuræ were free. There were numerous red blotches (ecchymoses) beneath the visceral pleura of both lungs 8 mm. in diameter. Many small nodules could be felt under the visceral pleura.

The lungs on section were found studded with pale gray hyaline miliary tubercles from 2 to 3 mm. in diameter. The lungs were heavier and more voluminous than normal. The tubercles were not as closely packed or so numerous as is often found in miliary tuberculosis, and the general color of the lungs was bright red.

The peribronchial lymphnodes contained a few small soft recently caseated tubercles. The nodes were enlarged and pigmented.

Heart: This organ was small and normal.

Liver: The liver was enlarged and pale, and there was slight atrophic cirrhosis.

Spleen: This was enlarged to three times the normal in size; the pulp was very firm. The malpighian bodies were distinct. Here and there were a number of small yellow nodules resembling tubercles.

Kidneys: There were a few depressions in a cortex diminished to 8 mm. in depth.

Pancreas: Normal.

Bladder: Normal.

Rib bone marrow: Normal and dry.

Brain: The pia-arachnoid was slightly edematous and more generally adherent to the cortex than normal. The calvarium was very thick.

Intestines: Several specimens of *Tricocephalus dispar* were found in the cecum. There were a few small superficial circular ulcers from 2 to 4 mm. in diameter in the cecum and ileum.

The mesenteric lymphnodes and those at the hilum of spleen were enlarged and pale.

Bacteriologic Examination.—Spleen smears were negative for malarial parasites or pigment. Oval and round bodies were free in the plasma.

In rib bone marrow smears there were traces of intracellular malarial pigment. A number of bodies similar to those in the spleen were seen.

In lung smears tubercle bacilli were absent.

There were myriads of intracellular and extracellular bodies similar to those found in the spleen and the marrow.

A moist coverslip preparation from intestinal ulcers showed motile amebæ.

Anatomic Diagnosis.—Acute miliary tuberculosis, pulmonary type. Tubercul us lymphadenitis, peribronchial. Chronic interstitial splenitis. Atrophic cirrhosis. Chronic interstitial nephritis, slight. Lymphadenitis, mesenteric. Chronic leptomeningitis. Edema of pia-arachnoid. Ulcerative enterocolitis. Amebiasis. General infection by protozoön.

APPEARANCE OF THE PARASITE IN SMEARS.

Lung: This specimen was stained by carbolfuchsin and Gabbet's methylen blue, overstained with polychrome methylen blue, and washed with eosin.

The polychrome blue was prepared as follows:

Methylen blue, pure medic, Grüb	g. 1.
Sodium carbonate, pure	g. .5
Distilled water	g. 100.

This was placed in thermostat one week, and kept at room temperature for six months.

The excess of blue was removed by washing the smear alternately with alcoholic solution of eosin (.5 per cent in 60 per cent. ethyl alcohol) one second and distilled water a few seconds, until the internal structure of the parasite showed plainly.

The parasite is oviform or round, and is surrounded by a clear refractile non-staining rim, in thickness about 1/6 the diameter of the parasite. This refractile rim is present in all smears, whether previously treated with acid blue or not. The structure is not homogeneous, but consists of a faintly staining substance and a deeply staining one; a clear space or spaces; and chromatin granules. The chromatin granules are generally single, sometimes two or more are counted. One large parasite appeared to have six such dots of chromatin. The granules are often situated in a clear non-staining zone at one side of the darker staining substance; at other times they are situated on the margin or within this substance; and also frequently appearing in the clear refractile capsule. The chromatin granules are generally dot shaped, very rarely elongated. Occasionally two chromatin dots placed together simulated a rod form.

The clear space or spaces resemble vacuoles; at times they resemble the clear non-staining spaces seen in filaria embryos and trypanosomes. The staining substance almost entirely fills the capsule or refractile rim of the parasite. The circular contour of the staining substance is at times broken on one side or place by the clear non-staining zone.

This zone varies in shape, size, and in its relation to the staining substance; being circular, oval, or irregular in form; being three-fourths the size of the entire parasite, or at times barely perceptible on account of its minuteness; being centrally located or excentric; and being single or multiple—two or three.

In size the parasites are from 1 to 4 microns through their greatest diameter; commonly this diameter is 3 microns.

The parasite appears to divide by fission into two equal or unequal elements. One parasite appeared to be dividing into four equal elements. Several parasites with chromatin dots scattered through their substance appeared as pre-segmenting bodies—ready to divide into five or six elements. Occasionally a smaller parasite may be seen close beside a larger one, as though separating from it, the smaller one being about 1 micron in diameter.

Although oval or round in outline, the staining substance,

together with the clear non-staining zone and chromatin granules, give a varying picture, depending on the point of view. Forms suggesting the appearance of familiar objects, such as the eye, a shield, a conch shell, a bullet, or a shuttle are seen. The resemblance of certain parasites to a mammalian embryo in "fetal attitude" is very striking.

In the lung smears the parasite is apparently always intracellular, and the cells contain from 10 to 100 or more parasites. The appearance of free parasites is probably due to the squeezing and breaking up of infected epithelial cells by pressure in making the smear. One unbroken alveolar epithelial cell occupied one-third the diameter of the field, 1/12 oil im. No. 1 oc. B. & L. Parasites had invaded the cell nucleus as well as the cytoplasm, and it was estimated that this cell contained more than 300!

Spleen and rib marrow smears showed fewer parasites, two or three to a field, and they appeared to be extracellular. The

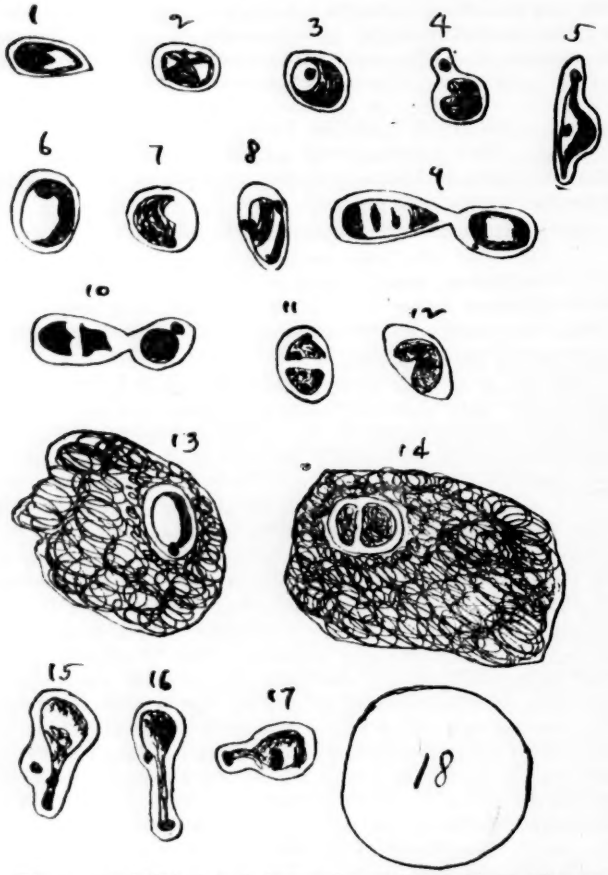

Fig. 1.—(× 2000), 1 to 8, forms of parasite; 9, 10, 11, 12 manner of subdivision; 13, 14, parasites within nuclei of spleen cells; 15, 16, 17, flagellate forms; 18, alveolar epithelial cell containing parasites.

nucleus of a spleen or marow cell appeared now and then to have been invaded. Each parasite had a definite refractile rim, as in the lung smears, and its internal structure could be well made out.

Red blood corpuscles were never invaded.

Three flagellated forms were seen in a lung smear. The distal extremity of one of the flagella contained a rod of chromatin placed at right angles to the flagellum, simulating the relation of centrosome to chromatin filament in *Trypanosoma Lewisi*. The flagella were single, short and thick, without chromatin filaments, and were enclosed by the refractile capsule, continuous with that of the body of the parasite.

EXAMINATION OF SECTIONS.

Sections were fixed in Zenker's solution and stained by eosin and hematoxylin, Van Giesen's method, and polychrome-methylen blue.

Lung: The alveolar capillaries are tortuous and engorged with red blood corpuscles. In places the walls are broken down, stretched, or greatly distended. No leucocytes were seen within the capillaries. The epithelial cells of the alveolar walls are desquamating or completely shed. In places there appears to be merely a single layer of endothelial cells separating the circulating blood from the alveolar contents. The alveoli are seen to be filled with red blood corpuscles, generally having a washed out appearance; red blood corpuscles and serum; or red blood corpuscles, serum, and large swollen alveolar epithelial cells containing many parasites.

Polymorphonuclear leucocytes are rarely observed in the alveolar contents; a few mononuclear elements are noted. There are no tubercles. The pseudo tubercular areas are made up of alveoli with broken, distorted, or collapsed walls, containing many alveolar epithelial cells distended by parasites. Small vessels or capillaries are seen to pass through the pseudotubercles, but there are no evidences of the hemorrhages seen in other alveoli. Within these areas there are enormous numbers of parasites generally contained within epithelial cells—rarely free. The nuclei of invaded cells stain well, though often more faintly than normal. The cytoplasm of badly infected cells is wanting, and there are numerous distended epithelial cells devoid of cytoplasm and parasites. The infected cells have a distinctly staining rim of cytoplasm, even when their nucleus and cytoplasm are gone.

Liver: There are numerous faintly staining areas ranging in size from that of a single glandular epithelial cell to those one-third the size of a lobule; in which the liver cells and endothelial cells of the portal capillaries are completely transformed by invading parasites. In the larger areas the cytoplasm and nuclei of the invaded cells have disappeared or do not stain. There is a mass of débris, imbedded in which are myriads of parasites. In places the liver cells are normal, in others they have suffered cloudy change. In these latter localities there appears to be a stasis of blood in the portal capillaries due to occlusion of capillaries by enormously distended endothelial cells filled with parasites. The red blood corpuscles are here "washed out."

There is a distinct primary invasion of liver cells in places, although oftener it would seem that many liver cells become invaded after they have had their nutrition cut off by infected overlying endothelial cells.

Around the portal spaces the connective tissue is increased in amount and there is a recent round cell infiltration. The bile capillaries and their epithelium are normal.

Spleen: The splenic spaces are greatly engorged with red blood corpuscles. The connective tissue is moderately increased, its cells are swollen, cloudy, and at times contain parasites. There is cloudy swelling of cells in small areas here and there, and many of these cells contain parasites. There are also numerous free parasites.

Lymphnode from hilum of spleen: The cortical follicles and medullary cords of the dense lymphoid tissue are, with the few exceptions noted, below normal. The capsule and reticulum throughout the node are the seat of degenerative changes. The reticulum of the loose lymphoid tissue encloses many large mononuclear cells possessed of distinctly staining nuclei, and containing many parasites.

There are two cortical follicles, and portions of a medullary cord which have undergone cloudy swelling and necrosis, amid the débris of which are cells containing parasites. The margins of these areas show beginning degenerative changes; many fragmented nuclei are seen, as well as mononuclear cells distended by parasites.

Peribronchial Lymphnode: This node contains several old fibro-caseous tubercles, and one giant cell. The reticulum and capsule of the node are greatly thickened in places. A lymph vessel beneath the capsule contains mononuclear cells infected by parasites.

There is seen to be a general infection by a parasite having a predilection for endothelial and epithelial cells.

The lesions are those of scattered focal necroses of liver, spleen and lymphnodes, with foci of catarrhal pneumonia and hemorrhages in the lungs, in which the lungs play a very passive part, there being absolutely no leucocytic infiltration of the miliary pneumonic nodules.

The infection was a fatal one, there being no other

lesions sufficiently grave to have caused death. The anatomic diagnosis of tuberculosis not being confirmed on examination of sections, save in peribronchial lymph-nodes.

The parasite, as studied from smears, presents certain resemblances to those found by Leishman, Donovan, Marchand, Ledingham and Wright, but the differences are so marked and the lesions so unusual that I feel the case is a unique one.[1]

For the parasite the name *Histoplasma capsulata* is proposed.

I wish to thank Acting Chief Sanitary Officer Dr. H. R. Carter for his kind permission to publish this report.

A MODIFICATION OF GOCHT'S COMPRESSION DIAPHRAGM.*

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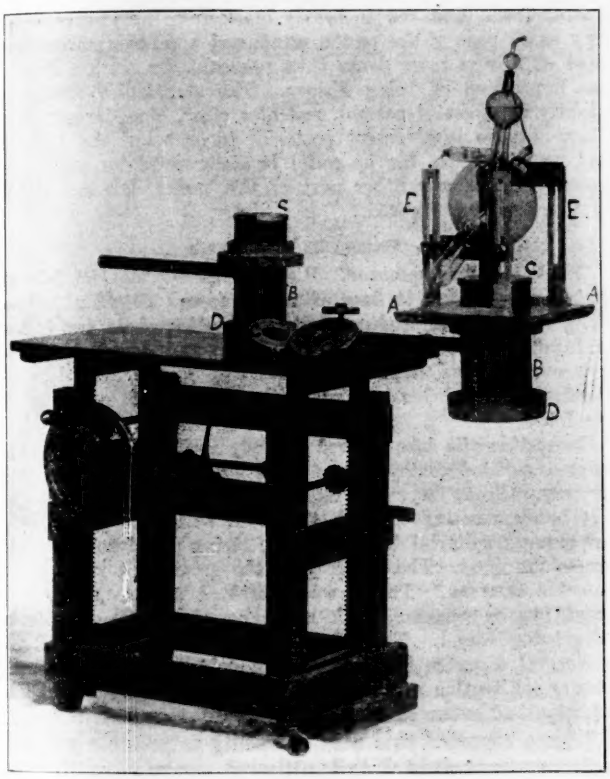
CHICAGO.

Shortly after he had presented his first paper on *x*-rays to the physiomedical society at Würzburg, Roentgen found that *x*-rays do not emanate from the platinum of the anti-cathode only, but also from the walls of the glass tube, from the air which the rays penetrate, in fact that they fill every space in the room in which the Roentgen tube is operating. These secondary rays, as they are called, or diffused rays, as they should be called, affect the sensitized plate, and the blurred and flat negatives which we so often see must be ascribed to these unwelcome secondary rays.



Modified compression diaphragm.

Roentgen himself recommended lead diaphragms to be put between tube and body to annihilate the effect of the secondary rays, and an American investigator, Charles Finley Easton, was the first (1896) to cover his tubes with a lead shell into which a changeable opening was made. Rumpel, in Hamburg, covers the body with thick lead plates, except the region which is to be Roentgenographed. Walter, in Hamburg, constructed a box made of lead, Levy in Berlin, Gocht in Halle, and many others have made original and valuable inventions in this field, but no one was so successful as Albers-Schönberg, in Hamburg, who constructed an apparatus which enabled him to exclude the secondary rays almost completely, and at the same time to reduce the thickness of the body as much as the patient could endure.

Unfortunately, this compression diaphragm of Albers-Schönberg is a very complicated mechanism, besides being so high in price that only a few operators are able to add it to their Roentgen instrumentarium.

Gocht has endeavored to simplify the apparatus, but his arrangement has added greatly to the weight of the instrument so that it is unhandy. I have taken up Gocht's idea and devised an apparatus (see illustration) as follows: A heavy board (A), covered on both sides with lead sheet, has in the center an opening in which two brass cylinders (B), lined inside with lead foil and of the same dimensions as the original Albers-Schönberg tubes, can be tightly inserted. The upper aperture of the cylinder is covered with lead diaphragms (C) of different sizes, while the rim of the lower aperture is covered with a heavy rubber ring (D). On the wooden board are two uprights (E), erected at such a distance from each other that a seven-inch tube can be supported so that the focus of the platinum target falls exactly in a vertical line drawn through the middle of the cylinder, and thus only the most effective rays are allowed to penetrate the body.

As I am working only with seven-inch tubes I had these uprights made steady. Of course, they can be made sliding so that a tube of any size can be used. If an operator is very anxious to avoid any evil effect on his own body these uprights can be connected with lead glass, but I think this is unnecessary.

The whole apparatus is firmly attached to an ordinary camera table, which, by a system of cog wheels, can be raised and lowered at will. As the table runs on castors, which can be arrested by a small lever-break, the whole apparatus can be easily transported to any part of the room. At the same time it can be made stable while in use. The apparatus combines cheapness with effectiveness.

406 Schiller Building.

CASE OF CHRONIC SUPPURATIVE ETHMOIDITIS, SARCOMA OF RIGHT TEMPORO-SPHENOIDAL LOBE, WITH MISLEADING SYMPTOMS.*

J. A. STUCKY, M.D.
LEXINGTON, KY.

On account of the extensive and serious pathologic condition, involving vital structures and very confusing and misleading symptoms, the following case is considered of sufficient interest for discussion:

Patient.—On Dec. 7, 1905, J. J. H., aged 51, was brought to me by Dr. E. V. Seay, of Salvisa, Ky., with the following history: He had been troubled for many years with nasal catarrh; at times large quantities of pus would discharge from nose, and this would be followed by great relief for some days or weeks. Six months previously he had a prolonged attack of malarial fever. Two weeks ago he began suffering excruciating pains in frontal region between the eyes, pain being aggravated by jarring the bed or when in a stooping position. He suffered greatly from nausea, mental depression and insomnia.

Examination.—His gait was unsteady, inclining to the right as he walked across the room. Skin was of muddy, septic appearance; right eye protruding and moved sluggishly. Very slight pressure or tapping over frontal sinus or at inner canthus gave rise to acute pain. The right nares was filled with mass of bluish red granulations, through which pus exuded. There was no evidence of the middle turbinates. The left nares

1. Since writing this article I have found the parasite in a second case.

* Presented at a meeting of the Chicago Surgical Society.

* Read before the Eastern Section American Laryngological, Rhinological and Otological Society at Syracuse, N. Y.

was much congested, but otherwise normal. Transillumination of the maxillary and frontal sinus was positive on right side. Ophthalmoscopic examination showed nothing abnormal in the fundus. The pulse was slow and full; articulation difficult and mind sluggish. He insisted that nothing was wrong but right side of his head. The tongue was heavily coated and breath foul. Blood count showed leucocytes of 19,000.

Diagnosis.—He was sent to the hospital and Drs. G. P. Sprague, F. H. Clarke and J. Estell saw him in consultation. All agreed on diagnosis of chronic suppurative sinusitis, with probable meningeal involvement of right temporofrontal base in purulent inflammation. The apparent aphasia at that time was thought to be due to stupor.

Course of Disease.—The urine was scant, loaded with indican and contained some albumin. A large dose of calomel and salol was given, followed by castor oil ℥j and salts ℥ss in six and eight hours alternately. He had a good night's sleep after taking 15 gr. each of salicylate and bromid of strontium. Patient was purged freely. Nasal irrigation followed by application of adrenalin solution gave some relief to pain, and breakfast was eaten with apparent relish. Two hours after eating he complained of increased pain, yawning and gaping constantly while awake. There was distinct aphasia—he is right-handed—with very frequent slight convulsions of the right hand and arm, and tongue deviates to the right. Constant pain is referred entirely to the right fronto-orbital region. A brain tumor of the left side was thought probable by one of the consultants. Late in the afternoon of December 8 symptoms of brain pressure came on. There was deep stupor and more bulging of the right eye. After consultation it was decided to operate at once.

Operation.—Patient was etherized without difficulty or excitement, pulse and respiration being improved by the anesthetic. I made the usual incision for entering the frontal sinus after Killian's method. The sinus was found free from granulations or pus, but the lining membrane was greatly thickened and congested and of a very dark bluish color. The nasofrontal duct was completely blocked by firm granulations, which, when removed, showed a completely degenerated ethmoid, having the appearance of polypoid degeneration so frequently seen. The whole of this was removed with curette and forceps. The maxillary sinus was found to be blocked by firm tissue, which I supposed to be polypi and granulations. To facilitate the removal of this, the sinus was entered through the canine fossa, and very offensive pus and firm granular tissue removed, which had the appearance of sarcoma. The nasal wall and floor of the orbit was involved in the process of necrosis. After completely cleaning out as far as possible all pathologic tissue and thoroughly cleaning the parts, the usual gauze packing and dressing was applied and patient put to bed in good condition. Duration of operation was one hour and twenty minutes. One hour after the operation patient was conscious, with normal temperature and pulse.

At 8 a. m. the following morning, ten and a half hours after the operation, pulse and temperature were normal, mind was clear, there was no pain, and no hesitancy in speech. Patient censured me for not operating on him sooner. He was thirsty and hungry, and there being no nausea a cup of coffee and a slice of toast were given, which he ate with a relish. These symptoms continued until 9:45 p. m. (twenty-four hours after the operation) when alternate stupor and restlessness came on, followed by yawning and grinding of teeth, and extreme restlessness. This condition increased until his death, thirty-one hours after the operation. There was no return of intense pain and no complete loss of consciousness, notwithstanding the deep stupor, until a few moments before his death, which came without a tremor.

Autopsy.—Four hours after death the autopsy was held by Dr. Julian Estell in the presence of Dr. Sprague and myself, and the report of the latter from a neurologic and the former from a pathologic standpoint is given.

DR. SPRAGUE'S REPORT.

"I saw Mr. J. J. H. at the Good Samaritan Hospital December 8, at 11:30 a. m. At that time he was very feeble, the skin was sallow, mouth and eyes were dry, and tongue covered with dense, dry brown coat. His pulse was 55 and respiration 15. The pupils were equal, moderately contracted, and reacted slowly to light and accommodation. Because of his weakened condition, his other reflexes were not tested. His mind was very sluggish, and he would lapse into unconsciousness while answering questions, but he complained of very severe pain under the right eye, and of severe but vaguely outlined pain over right frontal region. He insisted that he had no pain elsewhere, but was too nearly stuporous to discuss his condition further. There were no focal symptoms, although a slurred articulation and the occasional loss of a word suggested aphasia more than stupor.

He was operated on that night and I saw him again at noon December 9, at which time he was rather less dull than before the operation, but gave such irrelevant answers to questions that no statements could be gotten from him. His tongue, at the time, deviated to the right, and the right hand and arm were slightly convulsed every minute or less. He located the pain as before, but said it was less severe. His articulation was more impaired, and the aphasia, deviation of the tongue, and tremor of the right arm suggested disease in the third frontal and anterior central convolutions of the left side.

"At the autopsy, four hours after his death, December 11, part of the third frontal convolution and the lower part of the anterior central convolution of the right side were discolored from light red to nearly black from hemorrhages. A very small part of the region mentioned appeared normal, but most of it was more dense than normal. On section it gave the impression of being fibrous. The ventricular fluid was slightly in excess of normal, and of a clear, blood-tinged color. There was no involvement posterior to or below the fissures, and no disease as far as could be determined by naked eye examination in any other part of the brain. His son stated that he was right-handed."

DR. ESTELL'S REPORT.

"Skull cap was removed. Right temporosphenoidal lobe of brain was adherent to floor of middle fossa. Slight adhesions along vertex of longitudinal fissure extending about two inches in front and behind fissure of Rolando and down about one inch over cortex. Whole of right temporosphenoidal lobe of a red gray mottled color and meninges adherent over base of the lobe.

On section the lobe seemed entirely replaced by an encapsulated mottled red and gray mass of semi-solid, pasty consistency. Closer inspection showed trabeculæ of firmer fibrous like bands running through the mass with soft pasty, dark red gummy material in the spaces, giving an alveolar structure to the mass. The tumor gave the gross appearance of an 'infected sarcoma.' Tumor was examined microscopically and proved to be sarcoma, both small round and small spindle cells being found. The whole tumor was far advanced in process of degeneration, and showed evidence both of inflammatory infiltration and necrosis, the indication being that the infection had extended from the nasal accessory sinuses."

I have reported this case as briefly as possible without omitting important detail, although every hour the patient was under my care was filled with more or less interesting and peculiar symptoms. From the time I saw him until within four hours of his death, the temperature, pulse and respiration were recorded every three hours. The temperature varied from 96 to 98 F., pulse 56 to 68, respirations 15 to 19. Four hours before he died the temperature rose to 103, pulse 120, respirations 21.

Some of the most interesting points to me, and those selected for discussion, are (1) relation of cause and effect—was the cerebral condition the result of sinus condition or *vice versa*? (2) The confusing and misleading symptoms indicating pressure in left side of the brain. (3) Could general intracranial pressure exist without producing a motor symptom referable to right-sided pressure. (4) What would have been the probable result if the sinus disease had been eradicated months before?

DOUBLE EMBOLIC GANGRENE OF THE LOWER EXTREMITIES AS A COMPLICATION OF PNEUMONIA.

FRED F. ATTIX, M.D.
LEWISTON, MONT.

Patient.—A. J., aged 56, male, medium height, weight and figure.

History.—The patient has always used alcoholic beverages in moderation. The present illness began Jan. 20, 1906. Twelve days previously, he developed what he thought to be a cold; he used domestic remedies, but was not careful to avoid needless exposure. This state of affairs lasted for ten days. On the eleventh day he sent word that he could not leave his bed and a physician was summoned.

Examination.—Auscultation and the physical signs showed that there was pneumonia in the right lower lobe which was approaching resolution. The temperature was 103, pulse 160, and respiration 60. There was cyanosis and the lower extremities were cold.

Consultation.—On the following day I was called in consultation. At that time there was mental apathy and moderate effort was necessary to rouse the patient who then showed mild delirium. The pupils were moderately contracted and equal; the tongue was red, dry and fissured. Rectal temperature was 102.5, respiration varied from 46 to 50, and the pulse was 146, regular, of medium volume and with no signs of arterial sclersosis.

The area of cardiac dullness was normal, with moderate strength of heart muscle and no signs of endocarditis or of pericarditis. The lower lobe of the right lung was in the stage of resolution. There was moderate orthopnea. The urine was voided in large quantities on an average of every hour and the feces passed once daily.

During the night before I saw him the patient had suddenly developed pain in the right thigh, which was still present when I examined him. Tenderness and hyperesthesia were also present. There was a perceptible swelling about the center of Scarpa's triangle on the right side, and on palpation an indurated mass could be detected, below which there was no femoral pulse. Complete anesthesia of the skin was present to a point 2 inches above the knee, where the skin was hyperesthetic and cyanotic. The skin of the leg was very dry, cold and clammy, with a tendency to ulceration over the ridge of the tibial bone. The left leg was in much the same condition, although the embolus had lodged in the lower portion of the popliteal space on this side.

Termination of the Disease.—The toxemia developed and the patient died 14 hours later.

Autopsy.—A partial autopsy was made forty-eight hours after death by Dr. Tice, who made the following report: "At the profundal branch of the femoral artery an embolus had lodged and extended for one-half inch down the profundal branch and one inch down the main artery. Below this point the artery was patulous. Above (as far as opened to Pouparts' ligament) the artery was filled with loose clotted blood. No further autopsy was allowed." No bacteriologic examination has been made of the emboli at this time to determine if they were infected.

CONGENITAL SARCOMA OF THE ORBIT.

G. BETTON MASSEY, M.D.
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PHILADELPHIA.

The clinical report of a sarcoma in a child of 3 years, contributed to THE JOURNAL, March 3, 1906, by Dr. Spearman, of Whiting, Iowa, recalls a still more youthful case under my care at the Oncologic Hospital last summer. In this case the growth was strictly congenital, having been noticed at birth.

Patient.—Helen K., aged 6 weeks, was admitted to the hospital from Tyrone, Pa., July 3, 1905.

History.—Her parents were healthy and there was no history of malignant disease in the family. At birth a tumor the size of the tip of the little finger projected from the edge of the right upper eyelid. Two days after birth the tumor was removed by the attending physician, but recurrence immediately took place, and when the baby was admitted to the hospital six weeks after birth a tumor the size of a golf ball projected from the orbit, the eye being pressed downward and inward. The origin of the growth seemed from the history to have been in the middle structures of the eyelid, though conditions on admission showed that the whole orbit was infiltrated.

The general health of the little patient being apparently good, save for abnormal restlessness, it was decided to attempt a cataphoric destruction of the growth by a major operation of mercuric cataphoresis. The passage of a sufficient current through the head to accomplish this result was of course out of the question; hence it was necessary to confine the circuit to the growth itself by placing both poles within its substance.

Operation.—On July 5 the baby was placed under chloroform, a pointed electrode connected to the negative pole of the apparatus was pressed against the center of the tumor, and six fine zinc points coated with mercury and attached to the positive pole of the apparatus were inserted around the periphery of the tumor (which practically corresponded to the walls of the orbital cavity). With the electrodes thus placed a current of 350 milliamperes was gradually turned on and maintained for sixty-five minutes. The cataphoric destruction of the diseased eyeball was aimed at, as well as destruction of the tumor and sterilization of its edges. These purposes were apparently accomplished in the time mentioned, with no disturbance of the pulse and respiration and no loss of blood.

Subsequent History.—The baby was less fretful the following day than before the operation, and when recovered from the anesthetic nursed regularly. The slough came away July 18, including the eye-ball, though the devitalized optic nerve had to be clipped with scissors; this was done while the patient remained in a natural sleep in the nurse's arms. It was nevertheless seen that some disease remained higher up within the orbit, and, more significant of the futility of attempts at eradication, a metastatic tumor developed about this time in the cheek beneath the eye. A second major application of bipolar cataphoresis was made to both spots July 20, under chloroform, 160 milliamperes being used for twenty-five minutes.

In spite of the apparently vigorous growth of the little patient evidences of metastasis increased, a tumor developing beneath the jaw. An extension to the brain was later indicated by the occurrence of convulsions and coma, death supervening Aug. 30. A specimen of the tumor removed prior to the first application showed the growth to be a round-celled sarcoma.

1831 Chestnut Street.

Examination of Heart of Rameses II.—The French have recently purchased for the museum in the Louvre four urns containing the viscera of the king Rameses II of Egypt, the Sesostris of the Greeks. He died 1,254 years before the Christian era and his mummy has thus been embalmed for 3,164 years. The *Semaine Med.* states that Lortet and Renaut examined the urns. Nothing was found in the urns supposed to contain the stomach, intestines and liver except strips of linen and resinous substances, with a quantity of indeterminate dust. But in the urn supposed to contain the heart, the viscus was found in comparatively good condition. It had become flattened, forming an oval plaque about 4 cm. wide by 8 long, extremely hard and horny. It had to be sawed to obtain sections for examination. Thin slices could then be shaved off with a razor. Under the microscope these sections showed the arrangement of the muscle fibers characteristic of the heart. The anatomic texture of the organ was thus preserved by the embalming process.

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[*For other information see second page following reading matter.*]

SATURDAY, APRIL 28, 1906.

HEALTH OR DISEASE IN SAN FRANCISCO.

Not the least important among the problems the citizens of San Francisco are facing is the prevention of infectious disease. In catastrophes such as the one which has overtaken the great city of the Pacific coast, two factors are especially active in increasing the prevalence of diseases of germ origin. These are: First, the close physical association, even involving personal contact, into which a very large proportion of the population are forced, and, second, the diminished powers of resistance due to hunger, thirst, exposure, fatigue, and all the other accompaniments of the situation. The men, women and children exposed to infection become, so to speak, more inflammable at the same time that the opportunities for exposure are enormously multiplied. It needs no ghost to come from the grave to tell us of the danger. A difficult task lies before those on whom falls the responsibility for maintaining the public health in the present crisis.

Respect of property is being enforced in San Francisco with military rigor, and the method of shooting down petty marauders at the start had a wholesome effect on the baser sort, but the lives as well as the property of the decent citizens are at stake, and the need of decisive action is as urgent in the one case as in the other. There is no time for "barking up the wrong tree." The disposal of kitchen refuse should at present cause no particular concern. Disease does not "breed" in piles of garbage, however offensive the stuff may be to the senses. We are reading in the newspaper dispatches that "the miasma from putrefying corpses" is fast becoming a "menace" to the health of the city, but, while it is well to act as though this were actually true, it must be remembered that the emanations from decomposing animal matter, horrible though they are, have no power to cause typhoid fever or smallpox or any other infectious disease.

It is clear that the recognition and isolation of cases of infectious disease is of the first importance. The living human being is the culture medium in which disease germs thrive and from which they are transmitted to new centers. It is essential to detect the existence of infection as early as possible and then to enforce a quarantine with a promptness and thoroughness that leave nothing to be desired by the most exacting martinet. Halting and half-hearted measures have no place in San Francisco just now.

Besides the search for and supervision of diseased individuals, the authorities will doubtless watch carefully the disposal of all the excretions from the human body. It is now well known that some apparently normal persons may harbor pathogenic micro-organisms and may be the means of spreading disease just as widely as those who are frankly infected. The "chronic carriers of typhoid bacilli" several times referred to recently in THE JOURNAL[1] are an instance of this sort. No mistake will be made in assuming that the discharges from the bowels and bladders of seemingly healthy persons contain possibilities of mischief and in treating them as potentially infectious. Sources of drinking water will, of course, be carefully protected and all dubious supplies remorselessly cut off. The rôle played by the common drinking cup in promoting the spread of diphtheria and other infections will doubtless be kept in mind. The influence of the daily press, always great at a time like this, has already been brought to bear with good advantage in educating the public in an unhysterical fashion to the especial dangers of the situation. It would be a great triumph for the cause of preventive medicine in the United States if the San Francisco tragedy were allowed to go no further. Pestilence must not be permitted to claim more victims than the earthquake itself.

THE CALIFORNIA HORROR—AN APPEAL.

It is unnecessary to enlarge on what has already appeared in the public press relative to the conditions in California, especially in San Francisco, and to the need of help. The money and the necessaries of life sent by the nation at large for the general relief of all who were suffering is probably ample for the time being; but many thousands who were in good circumstances are now penniless, consequently without means to resume their occupations. This is true of many of the physicians who have lost not only their homes and all contained therein, but also their offices, libraries, instruments, etc., leaving them without the means to resume practice. The condition of many is undoubtedly desperate. There has never been a time when our profession could show its regard for its professional brethren in distress better than now. The Board of Trustees of the American Medical Association has authorized that THE JOURNAL'S columns be opened for the acceptance of subscriptions for the California physicians.

An appeal is, therefore, made to the profession throughout the land so that each one may have an opportunity of contributing something directly to help his professional brethren who have been so unfortunate in this terrible calamity. In many localities the county society will take up this matter; in such cases some will send their contributions direct to San Francisco; others may find it more convenient to send through the American Medical Association fund. In the latter case we

1. THE JOURNAL, Feb. 3, 1906, p. 365; March 10, 1906, p. 759.

shall be glad to print the total amount contributed by such a society, together with the amount given by each individual member.

It has been impossible thus far to get sufficiently in touch with physicians in San Francisco to make definite arrangements in regard to the distribution of the fund, but it is presumed that the officers of the Medical Society of the State of California and of the San Francisco County Medical Society will jointly create a committee to look after the matter. We hope that every member of the profession will do something in this hour of need. A list of the amounts already received will be found on page 1298.

LIMITS OF HUMAN ENDURANCE.

Physicians as well as the general public were startled by the sensational headlines in the newspapers last week which announced that, after twenty-five days of imprisonment in the mine at Courrières in northern France,[1] a fourteenth survivor had shocked one of the salvage party engaged rather in repairing the mine than in rescue work by placing his hand on his shoulder and asking aid. Some five days previously thirteen others, thought long dead, had been found alive. Such survivals for prolonged periods are not so rare as might be thought. A miner in the hard coal regions of Northeastern Pennsylvania was confined for even a longer period than these French miners and recovered completely from his trying experience. The failure of the authorities in charge of the rescue work in France to realize the possibility of such long survival eminently merits the disapproval which has been aroused among the people, and it is not surprising that social disturbances of various kinds should have been the result.

While it is not explicitly stated, it would seem that the physicians, who were summoned at the beginning of the rescue work to assist in caring for whatever victims might be taken out, were not sufficiently strenuous in their objections to the abandonment of efforts at rescue. Had they insisted on the possibility of some of the supposed victims of the accident being still alive, even after the end of a week or ten days or even longer following the accident, there seems no doubt that the rescue work would have been prosecuted with more vigor and with a concentration of purpose that would undoubtedly have saved many lives. Most of the bodies that have been found during the last week of search before the meeting with this survivor who had been twenty-five days confined showed evidence of comparatively recent death. But for the feeling of hopelessness that had been allowed to establish itself many of these victims would undoubtedly have been rescued.

Physicians' experience generally would seem to be sufficient to establish the possibility of survival for three weeks without food, provided that a sufficient supply of liquid can be obtained to maintain vitality at the expense of the tissues themselves. In the absence of water, death within five days is the rule, but otherwise there is no definite limit. Certain experiences with hysterical patients and with the sufferers from lethargic conditions, besides the well-known demonstrations by such fasters as "Dr." Tanner, would seem to show that human beings may very readily survive even for from forty to sixty days without food. Such survival is dependent to a large extent on an absence of physical effort to any noteworthy degree during the course of the abstinence from food. Miners, therefore, who are confined in an out-of-the-way part of a mine by an accident are likely to do much more toward their own ultimate rescue alive by avoiding efforts at helping themselves out if they are behind a thick barrier and waiting patiently for the salvage party than by exhausting their strength in what is almost sure to be misguided labor.

There are lessons in this sad experience in France that should not be lost, especially on physicians and mine authorities who are likely to find themselves face to face with such an awful responsibility. Fortunately mine accidents with us involve many less lives than were at stake in the French catastrophe, but the rescue problem is none the less important, since in such circumstances even the saving of a single life is a triumph not to be despised. In this sad affair human lives have undoubtedly been sacrificed because the limits of human endurance of privation were set too low—a mistake almost unpardonable with our present knowledge of Nature's possibilities.

1. News item, page 1299.

THE PROPOSED CRUSADE AGAINST BLINDNESS DUE TO PREVENTABLE OPHTHALMIA NEONATORUM.

For many years past sporadic efforts to reduce the amount of blindness in the country have been made by physicians. Either acting alone or in the mass as medical societies, they have done their best to spread the good news of a successful prophylaxis, so well stated by Dr. Park Lewis in his article on unnecessary blindness in this issue of THE JOURNAL.[1] Boards of health, also, have issued instructions to midwives; city councils have even enacted ordinances, while other agencies, lay and professional, have done their share in directing the attention of those most interested to the dangers inherent in leucorrheal discharges to the eyes and eyesight of the new born, to the symptoms that herald these dangers and to the most effective methods for preventing threatened blindness.

Doubtless these attempts to limit or to abolish preventable disease have had some effect, but in the United States the proportion of blind-asylum inmates to the population still continues to be about the same that it was ten years ago.

During the years immediately following Credé's discovery, the total and proportionate amount of ophthalmia neonatorum—especially in public lying-in hospitals—had greatly decreased. Since Credé's an-

1. THE JOURNAL A. M. A., April 28, p. 1262.

nouncement, also, in the private practice of well-informed medical men, the plan of instilling silver nitrate into the eyes of the new-born child whose mother has any form of leucorrhea has been pretty generally and thoroughly carried out. In quite a large percentage of such cases, too, the vaginal discharges are examined, and when the gonococcus is found particular care is observed in treating the mother with germicidal applications.

It has consequently followed that among the well-to-do a serious infantile ophthalmia is rather rare. In the homes of the improvident, the ignorant, the careless—and these are generally the poorer class in the community—the story is a different one. Their accouchements are usually attended by midwives or by overworked physicians who see their patients but once or twice after the birth of the child. A thorough anteparturient examination is often wanting and the mother may easily have had a neglected infection of the genitals at the time of her accouchement. Among this class, hygienic precautions are the exception rather than the rule, so that we can easily understand how its members still continue to contribute to our blind asylums. As Dr. Park Lewis points out, we seem in late years to have abandoned the crusade against preventable ophthalmia neonatorum, although the need of it is quite as palpable as it was twenty years ago and the remedy just as effective. It is quite as true to-day as it was when Credé announced his discovery, that a few minims of a 2 per cent. solution of silver nitrate dropped into each eye of a new-born infant is as harmless to its sight as it is preventive of blindness from gonorrheal or other dangerous infection.

Let us once more sound the note of warning until every accoucheur and every midwife in the land is fully informed of his or her duty. Let it be widely advertised that a free and effective remedy is at the ready disposal of the poorest mother in every part of the country. Allow the responsible parties no excuse for non-performance of duty, and then see to it that neglect of these precautions is strictly punished. If the movement be successful, a campaign of education must precede the enactment of laws on the subject. The American Medical Association may well act as the prime mover in this war against blindness, and there seems no room for doubt that if the plan suggested by Dr. Park Lewis is adopted by it and vigorously agitated by its constituent branches the country will be relieved of a great burden, while the happiness and effectiveness of many lives will be infinitely increased.

THE FLAT-FOOT SERIES.

The specialization of modern medicine, while of inestimable value both to the patient and to scientific medicine, has its drawbacks. The most important of these, and one which has been recognized since specialties existed, is the danger that after a time the specialist grows narrow, is always on the lookout for diseases which come within his specialty, and overlooks changes in other organs. That there is a reaction against these narrowing tendencies is shown by the tendency of modern surgeons to have their patients looked over by medical men, and *vice versa,* and by the appearance of journals dealing with the subjects on the borderline between medicine and surgery.

Among the conditions which are to be regarded as borderline conditions must be mentioned what Berry[1] calls the "Flat-Foot Series." We heartily agree with this author that it is a mistake to label all these cases flat foot, for in their earlier stages, and it is during these stages that the deformity should be recognized, the arch of the foot is not lost. Furthermore, there is little doubt that the very use of the term flat foot has led innumerable practitioners astray, the diagnosis being considered as ruled out because the arches of the feet seemed, and indeed were, undeformed. The condition is such a common one, its manifestations are so protean, and its relief, in most instances, is so easy that it is high time that the general mass of the profession became acquainted with the symptomatology and physical signs of its various phases.

So far as the symptoms are concerned, the most important point to be recognized is that the various phases of the flat-foot series may produce pain and other results at a considerable distance from the real lesion. Even pain in the pubic region and herpes progenitalia have been ascribed to weakened or flat feet. While some observers have doubtless been too enthusiastic in their advocacy of the condition as a cause of distant symptoms, there is little doubt that pain in the calf, knee, leg and thigh may all be signs of this pedal infirmity. Without question, some of the cases which are described under the head of sciatica also belong in this category, and the peculiar nervous symptom-complex known as meralgia paresthetica is said to be usually associated with the flat-foot series. In most cases it is apparent enough that the feet are at fault. There is loss of the elasticity of the walk, pleasure in walking becomes a thing of the past, pain, aggravated by wet weather, appears, walking becomes painful, even at night and in bed the feet ache, and there may be distressing nocturnal cramps in the calves. In advanced cases with marked muscle spasm and swelling of the feet, a diagnosis of tuberculosis of the foot may be made, but most of these patients are treated for rheumatism, gout, or arthritis.

In detecting the signs of the flat-foot series it is to be borne in mind that at one end of the series is the pronated foot, with little or no weakening of the arch, and at the other the rigid flat foot. In the later stages, diagnosis, of course, is easy; but in the earlier ones it may present considerable difficulties. The most important points to be noted are the gait and the position of

1. Albany Med. Ann., 1906, vol. xxvii, p. 250.

the foot at rest. The most characteristic thing about the gait is the outward rotation of the feet and the rolling in of the ankles. In the standing position, with the observer behind the patient, the prominence of the internal malleoli and the turning out of the foot are striking, and one gets the impression that the weight of the body passes far within its normal line, as indeed it does. Imprints of the foot on smoked paper, according to Berry, are worthless in determining the degree of the trouble.

The causes of this common condition are manifold. The fact that many cases occur during rapid growth, or in middle-aged people at the time when they take on fat, shows that a disproportion between the weight and strength of the foot is an important factor, and practically the same effect is produced when people of normal weight suffer from general muscular weakness or local foot inflammations. Again, some people may be born with a tendency to weakened feet, for feet may be defective just as well as lungs or arteries. In many respects, the most important factor is improper shoes, and it is especially important because it is preventable. Doubtless the trouble is partly with the shoemakers, who have been working along rule-of-thumb lines for years, but reform in this, as in other hygienic subjects, must come from the medical profession, and surely here reform should be easy, for it is just as easy to make a properly constructed shoe as an improperly constructed one.

THE SCIENTIFIC EXHIBIT AT BOSTON.

It is planned to have in the Scientific Exhibit at the coming session of the Association a representation of the methods and progress of medical science in America. The exhibit will be held in the spacious new laboratory buildings of the Harvard Medical School. These laboratories with the new museum will furnish unusual space and light for exhibition purposes. The exhibit will consist of specimens, models, diagrams, etc., and a large number of special demonstrations will be given. In part these will be on special subjects and will be given in small rooms adapted for the purpose, microscopes being used; in part, on subjects of general interest, the lantern and projection microscope being used in one of the large amphitheaters. There will be a laboratory in operation, showing laboratory methods as applied to diagnosis in medicine and surgery and to investigation. Few of the men working in special fields realize how numerous the methods are and how dependent modern medicine and surgery are on them. The exhibit in pathologic anatomy will be large and will be classified so as to show thoroughly individual diseases and special pathologic processes. In certain lines, as in neuropathology, the exhibit promises to be particularly good. The modern methods of photomicrography with subsequent enlargement of the negatives make it possible to show all the finer details of pathologic conditions. There is also a large exhibit in anatomy, histology and embryology promised, a special feature of which will consist of reconstructions of large wax models. Our knowledge in human medicine has largely depended on the study of disease in animals and on the experimental production of disease. The diseases of plants have also been of importance in showing modes of infection and the action of pathogenic organisms on tissues. There will be a full exhibit both of the diseases of animals and of plants, of those naturally acquired and those produced experimentally. A part of the exhibit will be of historical interest, and this will, in part, illustrate the lives and works of illustrious medical men, and, in part, consist of collections of surgical instruments, showing the evolution from the crude instruments of the past. The exhibits of the boards of health will be part of the general scientific exhibit and will illustrate water supply, sewerage, and the general subjects pertaining to public health and preventive medicine. In bacteriology there will be shown methods of diagnosis and investigation and also demonstrations of bacteria by means of cultures, photographs and diagrams. It is believed that the exhibit will do much good in many ways. It will bring together those whose work consists chiefly in laboratory investigation and enable them to see the methods and the results of others. It will especially stimulate those working in special lines of medicine or surgery, for they will see methods in other lines of work which might be used advantageously in their own. It will increase knowledge of disease, for the product of the work of many will give different points from which disease may be viewed. It will increase the sympathy and mutual respect of men for one another. Those who are willing to contribute to this exhibit should write either to Dr. F. B. Wynn, Indianapolis, or to Dr. W. T. Councilman, Boston.

THE UNRULY PRESS.

In the present state of public thirst after medical sensations and with the license allowed itself by the yellow press, it is dangerous to say anything startling or novel in relation to medical or surgical matters within the range of a reporter. A distinguished eastern surgeon relates an experience in point. Having mentioned in a lecture massage of the heart as a means of resuscitation, he was interviewed by telephone in regard to it, but carefully explained that he had never successfully employed the method, the patient on whom he had tried it having died. The next day's newspaper contained an account of his marvelous discovery and of his bringing the dead to life, and in the middle of the article was an account of an interview with his patient who had died two years before. In spite of President Cleveland's demand for a shedding of the esoteric in medicine, we have abundant reason to think it is still advisable for physicians to bridle the unruly member when reporters are near by.

A SURGICAL DILEMMA.

We have commented[1] on the outcome of a case in which a surgeon was sued because he performed an operation which was not on the program when he first began to operate. Though the procedure was entirely in her interest, the patient considered herself damaged because her consent had not been asked, and wanted to get something out of the surgeon as remuneration. Another case

1. THE JOURNAL A. M. A., April 14, 1906, p. 1116.

is of interest in this connection. A surgeon diagnosed appendicitis calling urgently for interference, but on preparing for operation he had reason to change his diagnosis and allowed the patient to return home. She thereon went to another hospital and was successfully operated on for an entirely different condition, and afterward brought suit against the first surgeon for not having been operated on, or, for what is practically the same thing, the correction of the wrong diagnosis. If the surgeon had proceeded and done what seemed to him required, the patient would probably have sued him for doing an operation to which she had not consented and possibly, having in his mind the precedent of the three first trials of the Minnesota case previously referred to, he naturally did not care to take the risk. Verily the way of the surgeon is sometimes hard. If he discovers it necessary to perform anything but an absolutely life-saving operation not contemplated in the beginning, without taking the patient out from under the anesthesia, he may still be liable to troublesome litigation. If, on the other hand, he pursues the other course, it seems he may be mulcted in damages for not making the diagnosis before.

AN UNUSUAL VACCINATION ACCIDENT.

We have all probably heard of the unfortunate individual who mistook an ivory vaccination point for a toothpick and the unpleasant consequences which resulted. A rather more striking and uncomfortable, but not inexcusable, accident is reported from Great Britain. A physician, preparing to vaccinate an infant, was struck in the eye by a little fragment of glass from the breaking of a tube of vaccine. Though he immediately washed his eye, the virus took and he had a vaccine pustule, presumably on the conjunctiva, as it is said that his eyesight is not likely to be affected.

INFLUENZA AND APPENDICITIS.

It is often difficult, in medicine as in the ordinary affairs of life, to distinguish between coincidence and cause and effect. Medical men have been accused on more than one occasion of being particularly obtuse in this connection, but we can not see that they are worse than the rest of mankind. It will be remembered that in the winter of 1889-90 influenza reappeared among us, and that about the same time McBurney's point began to creep into the literature, and appendicitis became fashionable. The coincidence caused a not inconsiderable number of physicians to declare that the great increase in the incidence of appendicitis was due to influenza, and that this was capable of proof. To read many of the articles on the subject one might suppose that the matter was beyond question. Rostowzew,[1] who has recently gone over the whole subject very carefully, states that the belief that influenza causes or predisposes to appendicitis is absolutely ungrounded, except in the extremely rare cases in which the influenza bacilli have been found in the lesions. Too much has already been thrown on the shoulders of the influenza bacillus, and one feels strongly inclined to paraphrase the well-known remark and say: "Oh, influenza, how many crimes have been committed in thy name."

1. Mittellungen aus den Grenzgebieten, 1906, vol. xv, p. 564.

Medical News

ARKANSAS.

State Meeting.—The Arkansas State Medical Society will hold its annual meeting at Hot Springs, May 8-10, and a good meeting is expected. Dr. Joseph M. Mathews, Louisville, Ky., will be the guest of honor and will deliver a popular lecture on the night of the 9th to which the public is invited.

COLORADO.

Children's Hospital Organized.—A children's hospital association was organized in Denver, April 5, with Dr. Minnie C. T. Love at the head of the institution.

New Dispensary.—The directors and faculty of Gross Medical College, affiliated with Denver University, held a meeting April 9, at which it was decided to erect a new dispensary in connection with the college at Fourteenth and Arapahoe streets.

Personal.—Dr. Seymour D. Van Meter, secretary of the State Board of Medical Examiners, and Mrs. Van Meter, who were in San Francisco April 18, have telegraphed that they are "safe, not even scratched."——Dr. Orville M. Clay, Montrose, suffered a fracture of the wrist and severe lacerated wounds in a runaway, April 1.

War on Tuberculosis.—At a meeting held at the headquarters of the Charity Organization Society, Denver, April 9, the following resolution was adopted:

WHEREAS, It appears to the Charity Organization Society of Denver that more efficient means should be devised and inaugurated for the prevention and relief of tuberculosis in the city and county of Denver and throughout the state of Colorado, as affecting conditions in the city and county of Denver. Now, therefore, be it

Resolved, That the president of this society appoint a committee consisting of nine physicians residing in the city and county of Denver, well known for their ability and interest in this subject, which committee, with the president of this society as member ex-officio, shall be known as the Committee of the Charity Organization Society of Denver, for the Control of Tuberculosis.

That such committee shall be authorized and empowered to co-operate with the Charity Organization society and its co-operating institutions, to take all necessary steps to inaugurate such methods as in their judgment will best accomplish the purpose of their organization.

CONNECTICUT.

Bequests.—Danbury Hospital has received a bequest of 100 shares of stock, valued at $5,000, by the will of the late Edward E. Gilbert, Georgetown.——The Hartford County Medical Society has, it is understood, received a gift of $10,000 by the will of the late Dr. William T. Bacon. He also bequeathed $5,000 to establish a free bed in the eye and ear department of the Hartford Hospital.

GEORGIA.

The State Meeting.—The fifty-seventh annual meeting of the Medical Association of Georgia was held at Augusta, April 18-20, under the presidency of Dr. William Zellars Holliday, Augusta. The following officers were elected: President, Dr. Henry H. Martin, Savannah; vice-presidents, Drs. Theodore E. Oertel, Augusta, and Jarrett W. Palmer, Ailey; secretary-treasurer, Dr. Louis H. Jones, Atlanta; delegates to American Medical Association, Drs. Thomas D. Coleman, Augusta; George R. White, Savannah; Henry F. Harris, Atlanta. Savannah was selected as the place for holding the next annual meeting. The following preamble and resolution were adopted:

WHEREAS, It has been brought to the attention of this body that there is a pure food bill at present before the Congress of the United States, known as the Hepburn Bill; and

WHEREAS, This bill meets with the approbation of this body representing the medical profession of Georgia; therefore, be it

Resolved, That this body earnestly requests the senators and representatives in Congress from the State of Georgia to vote for the said bill, and that they use all their influence to further its passage.

The following was likewise unanimously adopted:

Resolved, That it is the sense of this association that the minimum fee for life insurance examinations should be $5.

An account of the scientific proceedings will be given next week.

ILLINOIS.

Personal.—Dr. James A. Egan, secretary of the State Board of Health, who has been ill for the past three weeks, is greatly improved.——Dr. and Mrs. W. H. McClure, Sheldon, have recently returned from California.

State Society Meeting.—The Illinois State Medical Society will meet in Springfield on the date originally set, May 15, 16 and 17. The order changing the date of the meeting to May 22, 23 and 24 has been rescinded.

Epidemic Diseases.—A large number of additional cases of smallpox have appeared at Fairhaven and Milledgeville.——The public schools of Metcalf have been closed on account of an epidemic of diphtheria.——Smallpox has broken out in Montgomery County and it is reported that in one family seven members are victims of the disease.

Chicago.

May Alter Interneship Ratio.—Action may be taken by the board of Cook County commissioners revising the apportionment of internes to the County Hospital, owing to the lack of eligible appointees in the eclectic and homeopathic schools.

Personal.—Dr. Eugene S. Talbot was unanimously made an honorary member of the Belgian Society of Stomatology at its meeting, April 8.——Dr. R. R. Campbell, who has been away from the city during convalescence after an operation for appendicitis, has returned.

Deaths of the Week.—For the week ended April 21, 645 deaths were reported, 24 deaths more than for the preceding week and 87 more than for the corresponding week of last year. The mortality was at the annual rate of 16.40 per 1,000. Pneumonia, as usual, far exceeds any other death cause, with 123 deaths; consumption follows with 75, and then come violence, including suicide, with 42; heart disease with 40; nephritis with 35; acute intestinal diseases with 32; bronchitis with 21; nervous diseases with 39, and cancer with 28 deaths. Diphtheria caused 11 deaths during the week; measles, 2; scarlet fever, 13; typhoid fever, 10, and whooping cough, 1 death.

KANSAS.

Offered Hospital Site.—The Sisters of Charity, Leavenworth, have been offered a site for a new hospital on South Second Street, overlooking the river. The site contains 20 acres and is valued at about $35,000.

Personal.—Dr. W. F. Schoor, Hutchinson, has been appointed coroner of Greenough County, vice Dr. Henry M. Stewart.——The residence of Dr. Edwin T. Shelly, Atchison, was damaged to the extent of $2,000 by fire, March 25.

Smallpox.—More than 40 cases of smallpox were reported from Wichita for the five weeks ended March 22. No deaths have thus far occurred and stringent quarantine regulations are being enforced.——Smallpox has broken out among workmen in a cement plant in Iola.

Graduating Exercises.—The graduating exercises of the Kansas Medical College, the medical department of Washburn University, Topeka, were held April 18, when a class of 18 received diplomas from Dr. William S. Lindsey. Dr. Herbert L. Alkire delivered the faculty address.

Charter Revoked.—The state charter board on April 14 revoked the charter of the Kansas State Medical and Surgical Institute, an institution which it is alleged is deceiving the public by giving out the impression that it is a state institution. Dr. William J. Bonesteel is president, and Dr. C. A. Bonesteel, manager, of the institution.

Society News.—The Southeastern Kansas Medical Society, at its meeting in Fort Scott, March 3, elected Dr. Elmer E. Liggett, Oswego, president; Dr. James C. Cummings, Bronson, vice-president; Dr. Andrew J. Roberts, Fort Scott, secretary, and Dr. J. E. Jewell, Moran, treasurer. The society passed resolutions condemning in unmeasured terms the sale of "patent medicines" by druggists.——At the annual meetinf of the Golden Belt Medical Association, held at Abilene, April 5, the following officers were elected: Dr. Edgar L. Simonton, Wamego, president; Dr. Frank M. Gaines, Solomon, vice-president; Dr. Howard N. Moses, Salina, secretary, and Dr. William S. Yates, Junction City, treasurer.——At the last meeting of the Sumner County Medical Society a resolution was adopted against allowing insurance companies to fix the fee for medical examination.

MARYLAND.

Baltimore.

Deaths from Lung Disease—For the week ended April 21 there were 23 deaths from pneumonia and 29 from consumption. The usual proportion of 5 to 2 was observed between the mortality of colored and whites.

Personal.—Dr. John C. Hemmeter addressed the Medical Association of Greater New York, April 10, on "Diseases of the Intestines That Are on the Border-line Between Internal Medicine and Surgery."——Dr. Hugh C. Trout, resident physician at the Union Protestant Infirmary, and Dr. Robert Nelson, assistant physician, will soon leave for Europe. Dr. Theodore F. Riggs will succeed Dr. Trout.——Dr. James Cooper has returned home after a year and a half of sea travel.——Dr. William Lee Howard has moved to Westboro, Mass., and will devote himself to literature and literary work. ——Dr. Robert H. P. Ellis has returned from a trip to Mexico. ——Dr. George W. Mahle, assistant resident physician of Bayview Hospital, is convalescent from typhoid fever.

MASSACHUSETTS.

Bequests to Hospitals.—By the will of the late James F. Redington, Boston, $1,000 each is devised to the Children's Hospital, Carney Hospital and the Little Sisters of the Poor.

Personal.—The health board of Ware has organized and elected Dr. Adolph A. Auger, chairman, and Dr. Worthington W. Miner, secretary.——Dr. Martin M. Brown has been elected to fill the vacancy in the advisory board of the medical staff of North Adams Hospital.——Dr. George L. Black, city physician of Lawrence, has resigned.——The board of health of Adams has organized with Dr. Alfred Desrochers, chairman. ——Dr. Samuel B. Strickland has resigned from the Waltham board of health.——Dr. H. Gordon-Forbes, Chicopee Falls, is taking a trip to the Bermudas.

MINNESOTA.

Trip to the Orient.—A party of 100 physicians and their families propose to take an eighty-one-day trip to the Orient, leaving St. Paul June 25 and sailing from Seattle on one of the Great Northern Steamships.

Refuses to Pardon Malchow.—The President has announced that he will not interfere in the case of Prof. C. W. Malchow, formerly professor in Hamline University, sentenced to two years' imprisonment on the charge of sending improper literature through the mails.

Ask Same Fee for All Examinations.—At the semi-annual meeting of the Brown and Redwood Counties Medical Association, held in New Ulm, April 17, it was decided to ask the State Medical Society to co-operate in having all physicians refuse a rate lower than $5 for examinations for life insurance.

Hospital Notes.—The Wilcox homestead, East Minneapolis, has been selected as the site for a new hospital, and liberal subscriptions toward the $10,000 required have already been obtained. The St. Anthony Medical Society is taking a great interest in the enterprise.——Negotiations are in progress for the establishment of a hospital at Aitkin.——William H. Kelly, Sr., has presented the Owatonna City Hospital with $10,000, hampered by no conditions.——Immanuel Hospital, Mankato, will be built at the corner of Fourth and Walsh streets, work being begun as soon as the spring opens.

Personal.—Dr. R. Ignatius Hubert, St. Cloud, has been appointed physician of Stearns County.——Lieutenant William H. Tefft, assistant surgeon, U. S. Army, stationed at Fort Snelling, sustained a fracture of the leg in an informal wrestling match at the Officers' Club, March 24.——Dr. Frederick O. Gronvold, Gary, will soon leave for Germany to take a postgraduate course.——Dr. Francis R. Woodard, Minneapolis, who has been ill with pneumonia, is reported as improving but not yet convalescent.——Dr. Oswald Leicht, Winona, has declined to accept the appointment tendered him by the government as a member of the State Board of Medical Examiners.

Teachers and Tuberculosis.—The State Board of Health, at its meeting January 9, took action advising that those suffering from tuberculosis be not employed as teachers:

1. Because they can not hope to recover while following such an occupation.
2. Because they are a menace to the school children under their care.

And that children suffering from tuberculosis be excluded from school:

1. Because their recovery is not probable while they are kept under the strain of school life.
2. Because the importance of fresh air, rest and good food is even greater for the growing child than for the adult, and the child attending school does not get the necessary amount of any of these.
3. Because close confinement in school may be followed by other forms of tuberculosis than consumption, and may cause permanent deformities or death.
4. Because school children with consumption (pulmonary tuberculosis) are a decided menace to their associates.
5. Because by excluding tuberculous children from school and allowing them to recover and at the same time preventing the infection of others, many lives of value to the state may be saved.

The secretary was instructed to send these suggestions to every school board, health officer and to the superintendents of city and county schools throughout the state.

MISSOURI.

Licenses Revoked.—The licenses of Dr. A. F. Keeler, St. Louis, and of Annie Newland and Mrs. Matilda Myers, midwives, of St. Louis, were revoked by the State Board of Health for unprofessional methods, April 12.

NEW YORK.

Smallpox.—Three cases of smallpox have developed in Middletown within forty-eight hours. The house in which the cases occurred is quarantined and there is no fear of a spread of the disease.

Diseased Cattle Slaughtered.—Under the direction of the state authorities 23 head of cattle suffering from tuberculosis were killed at Rome. All the cattle had responded to the tuberculin test, and the postmortems showed that all were diseased.

To Restrict Sale of Poisons.—Health Commissioner Green of Buffalo appeared before the aldermanic committee on ordinances April 12 and spoke in favor of the proposed ordinance for the restriction of the sale of carbolic acid and cocain in the city.

Medical Club Organized.—Physicians of Poughkeepsie, all members of the Dutchess County Medical Society, have formed a local club, known as the Dutchess Club, with the following officers: President, Dr. John C. Otis; vice-president, Dr. Charles W. Pilgrim; secretary, Dr. Frederick J. Mann, and treasurer, Dr. James E. Sadlier. The object of the club is to take up and consider all matters looking to the improvement of the sanitary condition of Poughkeepsie.

Personal.—Dr. and Mrs. Henry L. K. Shaw, Albany, sailed for Europe, April 3.——Dr. William W. Carleton has been elected health officer of Waterloo.——Drs. A. LeRoy Chapin, Niagara Falls, Flavius J. Baker, Lockport; E. P. H. Griswold, Niagara Falls, and John H. Miller, Niagara Falls, were elected delegates to the eighth district branch of the New York Medical Society by the Niagara County Medical Society.——Dr. James M. Rutledge, Syracuse, has been appointed district physician in place of Dr. Albert S. Hotaling, resigned.——Dr. Horace M. Edmonds has been reappointed health officer of Tonawanda. ——Dr. Thomas D. Collins has been reappointed health officer of Ballston Spa.

Illegal Advertisements Barred.—The United States postoffice authorities and the Medical Society of the County of New York are continuing their campaign against illegal advertising medical practitioners. The recent order of the department, denying the use of the mails to about 50 persons and firms in Manhattan and Brooklyn, accused of such practices, has been followed by a notice served on three Manhattan newspapers to the effect that if they continue publication of such advertisements they will not be permitted to send their papers through the mails. The three papers referred to have complied with the order.

New York City.

Bequests.—By the will of Mrs. Sarah E. Sands of Lakewood, N. J., March 30, St. Luke's Hospital is given $15,000 to be used for the endowment of three beds in memory of the testator's husband, Abraham B. Sands.

Deaths from Violence.—The report of deaths by violence for the first quarter of 1906 in the Borough of Manhattan shows an increase in homicides during each month, there having been 18 more reported in March than in January.

Hospital Conference.—A conference has been organized for the purpose of preventing the extravagance and waste in hospital maintenance. Circular letters have been sent to the superintendents of the various hospitals asking for details regarding the financial management of the hospitals.

Personal.—Dr. J. Richard Kevin has been appointed assistant surgeon of the Fourteenth Infantry, N. G. N. Y., vice Dr. Arthur H. Bogart, resigned.——At a meeting of the New York Academy of Medicine, April 5, Dr. Wendell C. Phillips was elected vice-president, succeeding Dr. George Ryerson Fowler, deceased.

Patients in Bellevue Hospital Vaccinated.—All patients who were in fit condition were vaccinated this week. There were nearly 900 patients and all submitted readily except the alcoholics, the majority of whom, not being prisoners, beat a very hasty retreat when told they would have to be vaccinated if they remained.

Rockefeller Institute for Medical Research.—Invitations are out for the opening of the laboratories at Avenue A and East Sixty-sixth Street, on May 11, at 4 p. m. Addresses will be made by President Charles William Eliot of Harvard University, President Nicholas Murray Butler of Columbia University, Dr. William H. Welch, president of the board of directors, and Dr. Luther E. Holt, secretary of the board of directors.

Hospital Finance and Economy.—A second meeting of representatives of all the hospitals of Greater New York was held at the Academy of Medicine, April 18, at which the report of the committee on constitution and by-laws was received, the permanent organization completed and a program for the ensuing year adopted. The chief object of the meeting was to endeavor to establish and maintain a healthy state of affairs in hospital administrations by means of the Hospital Conference of the City of New York.

Opposition to Hospital Transfers.—Coroner Harburger, in charging a jury in a case in which death is said to have been due to the transfer of a patient in a precarious condition from one hospital to another, said that he thought this practice was nothing short of murder. The jury in its verdict sustained the board of coroners of the borough of Manhattan in its attempt to abolish the system of transferring from one hospital to another patients whose condition was critical.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended April 14, 1,512 cases of measles, with 47 deaths; 390 cases of tuberculosis, with 183 deaths; 328 cases of diphtheria, with 35 deaths; 220 cases of scarlet fever, with 20 deaths; 93 cases of varicella, with 1 death; 41 cases of cerebrospinal meningitis, with 30 deaths; 34 cases of pertussis, with 6 deaths; 30 cases of typhoid fever, with 10 deaths, and 5 cases of smallpox, making in all 2,653 cases, with 332 deaths.

New Jewish Hospital.—This hospital, which is the successor of the old Memorial Hospital for Women and Children, and is situated in Classon Avenue, Brooklyn, will open its dispensary May 3 and the entire hospital will be ready for occupancy October 1. The wards will have room for about 175 beds and there will be 29 private rooms. The dispensary will have 11 clinics and a staff of 30 physicians. Both dispensary and hospital will be free to all, regardless of color or creed. The cost of maintenance will be about $100,000 annually, of which the city will contribute about $7,000.

NORTH DAKOTA.

State Society Meeting.—The annual meeting of the North Dakota Medical Society will be held in Fargo, May 16 and 17.

Smallpox.—Smallpox is reported to have broken out near Litchville. The disease is said to have originated among a party of Dutch immigrants. Strict quarantine regulations are being enforced.——There have been three cases of smallpox in Cando.

Hospitals Planned.—Drs. W. H. M. Philip and Harwood have purchased a residence in Hope in which they will establish a hospital.——Provided the city of Grand Forks will appropriate $15,000 and donate a block of land, a Catholic sisterhood will erect a hospital with all modern equipments and accommodation for 60 patients.

OHIO.

Defendant Wins Suit.—In the suit brought by William Bowers against Dr. William Z. Kumler, Cincinnati, in which $10,000 damages was claimed for alleged malpractice in the setting of a broken shoulder, the jury found for the defendant.

Personal.—Dr. George Mykinger, an interne in the City Hospital, Cincinnati, was assaulted by a delirious patient recently and had a rib fractured.——Drs. Magnus A. Tate and Charles L. Bonifield have been elected delegates from the Hamilton County Medical Society to the Ohio State Medical Association, and Drs. Robert Carothers and E. Gustav Zinke have been elected alternates.——Dr. Francis Dowling, Cincinnati, has been commissioned a member of the board of examiners for the sixth civil service district, which includes the states of Ohio, Indiana and Kentucky.——Dr. Colston L. Dine, Minster, who was operated on several weeks ago, has recovered and resumed practice.——Dr. Floyd F. Swimley, Forest, is improving and it is hoped that he may not lose his eyesight.—— Dr. Charles M. Hendricks, Toledo, at present house physician of the National Jewish Hospital for Consumptives, Denver, has been appointed to the staff of Phipps Sanitarium in that city.——Dr. Francis M. Murray, Delaware, while making a professional call, April 16, was struck by a passenger train on the Hocking Valley Railway, his horse killed, his buggy demolished and he himself sustained a fracture of the arm and numerous contusions.——Dr. Arthur E. Osmond has been appointed successor to Dr. John E. Stemler as receiving physician of the Cincinnati City Hospital.——Dr. Parker F. South-

wick has been reappointed city physician of Sandusky.——Dr. Frank S. Pomeroy, Chardon, who has been critically ill with typhoid fever, is reported to be improving.——Dr. Harry R. Geyer, Zanesville, has been elected delegate to the Ohio Medical Association from the Muskingum County Medical Society.

OKLAHOMA.

Association Meeting.—The Cleveland County Medical Association at its meeting elected Dr. David W. Griffin, Norman, president; Dr. Halshaw, Denver, vice-president, and Dr. Silas T. Burch, Norman, secretary and treasurer.

Personal.—Dr. J. K. Julien, Covington, has been made coroner of Garfield County, vice Dr. Sarben, resigned.——Dr. H. K. Wilson has been made county superintendent of health vice Dr. Henry C. Bowers, Enid, resigned.——Dr. Samuel A. Lively, Wakita, is seriously ill in a hospital in Wichita, Kan.

Hospital Notes.—An addition of 20 rooms is being made to each building of the Territorial Sanitarium, Norman. There are at present nearly 500 patients in the institution.——It is proposed by the hospital commission of the Methodist Episcopal Church to purchase the City Hospital, Guthrie, to double the capacity of the institution and to establish a nurses' training school in connection with it.

License Revoked.—Judge Burford on April 5 decided against Dr. Calvin D. Gully in the proceedings brought against him by the attorney general, and revoked his license to practice medicine in Oklahoma. In revoking the license the judge held that it had been obtained by fraud, as the school from which Dr. Gully obtained the diploma was the Independent Medical College and a diploma mill. The attorney general showed that the school mentioned was chartered Oct. 20, 1896, and that Dr. Gully obtained his diploma 15 days later.

OREGON.

Fined for Failure to Report.—Dr. John Madden, Portland, was fined $25, March 30, for failure to report a case of contagious disease. Dr. Madden held that the malady was chickenpox and City Health Officer Dr. Cortez H. Wheeler declared it to be smallpox.

New Hospitals.—A hospital is to be started in Forest Grove.——The Sisters of St. Francis will begin the erection of a hospital building in Klamath Falls in the autumn.——The Hot Lake Sanitarium, Le Grande, is to be improved by the erection of a three-story building with a glass-covered conservatory, the installation of a cold-water system and other conveniences at an expense of $100,000.

Personal.—Dr. Andrew J. Gusy, Portland, has gone to New York for treatment of a serious affection of the eyes.——Dr. Edward B. McDaniel, Baker City, has been appointed surgeon of the Oregon Railway & Navigation Company vice Dr. Taylor N. Snow, resigned.——Dr. John Wright, Roseburg, is critically ill.——Dr. John J. Fisher was dangerously wounded in an attempted holdup in Portland, March 20.

Condemns Contract Practice.—The Portland City and County Medical Society at a recent meeting adopted the following resolutions:

Resolved, That the City and County Medical Society of Portland, Ore., condemns the following forms of contract practice:

First.—Any form of contract to treat the members of any association or corporation, whose membership is composed of persons obtained from the general public by solicitation of agents or otherwise.

Second.—Any form of contract to treat the members of any lodge or order or their families.

Resolved, further, That we recognize the right of contract on the part of members of this society with firms or corporations whose sick benefits are limited to the employés of said firms or corporations, or in the case of states, counties or municipalities to the indigent poor; provided, however, that in the case of firms and corporations such contract shall be for a sum that shall not be less, in the aggregrate, than that provided for as a minimum charge in the schedule of fees adopted by this society.

PENNSYLVANIA.

Typhoid Fever Prevalent.—There are at present more than 400 cases of typhoid fever in Pittsburg and Allegheny, the majority of the cases being in the latter city.

Typhoid on the Wane.—During the twenty-four hours ended April 18, only 15 cases were reported to the Pittsburg bureau of health, showing a marked decrease.

Sentenced for Malpractice.—Dr. Edwin S. Cooper, New Castle, was sentenced on March 24 to 15 months' imprisonment, having been twice convicted of conspiracy to perform criminal operations.

Gifts to Hospitals.—Mrs. Lizzie B. Plumer has given $12,500 to the Franklin Hospital for the purpose of establishing and endowing a free room to be known as the Henry Baldwin Plumer room.——Plans have been prepared for a new ward at the Chester Hospital, to be given by Alfred O. Deshong.

Personal.—Dr. W. Albert Nason has been re-elected secretary of the Nason Hospital, Roaring Springs.——Dr. William W. Cole has been appointed surgeon of Allegheny, vice Dr. T. L. Hazard, and Dr. Francis X. Straessley succeeds Dr. Daniel I. Jamieson as city physician.——Dr. Isaac N. Taylor has been elected president of the Meadville board of health; Dr. Joshua M. Cooper, secretary, and Dr. Howard V. Merrell, health officer.——Dr. John M. Sheedy has been reappointed a member of the Altoona board of health.——Dr. Ulysses S. G. Heil has been elected president, and Dr. Sydenham P. Uhler, vice-president, of the board of health of Easton.——Dr. Herbert S. Van Kirk has been elected president of the McKeesport board of health.——Dr. Hamilton K. Beatty has been appointed superintendent of the Allegheny bureau of health.——Dr. Francis X. Weil, York, has been elected treasurer of the York County Medical Society, vice Dr. Lawton M. Hartman, York, resigned.——Dr. John B. Groh has been re-elected health officer of Lebanon.——The mayor of Franklin has appointed the following board of health: Drs. Edward W. Moore, Samuel G. Foster, Harry F. McDowell and P. H. Conradson, and Mr. M. S. McKinzie.

Philadelphia.

Personal.—Dr. James W. Holland, dean of Jefferson Medical College, has resigned his deanship, but will retain the chair of chemistry.

Money for Hospital.—The sixth annual charity ball given for the benefit of Mount Sinai Hospital, April 18, netted $2,000 for the institution.

Medical Club Reception.—The Medical Club of Philadelphia tendered a reception to Dr. William H. Hartzell, president of the Medical Society of the State of Pennsylvania, and Dr. Oscar H. Allis, April 20.

Wins Malpractice Suit.—In the case of Dr. Walter Browning, sued by Elias B. Smith for $10,000 damages for alleged improper and unskillful treatment, the plaintiff was nonsuited in the Court of Common Pleas, April 11.

Pennsylvania Relief Fund.—The monthly report of the Employés' Relief Fund for the Pennsylvania Railroad Company's lines east of Pittsburg and Erie shows that the payments of benefits to its members and the families of deceased members for March, 1906, aggregated $150,694.15, of which $63,835.50 was on account of death and $86,858.65 on account of disablement by sickness and accident. The payments thus far have amounted to $14,750,045.51, of which $6,059,112.20 was on account of death of members, and $8,690,933.31 on account of disablement.

Fraudulent Oil Dealers Arrested.—Fifteen individuals were arrested, April 15, charged with selling oil represented as olive oil. In the specimens analyzed no trace of olive oil was discovered. They consisted wholly or in part of cottonseed oil, sesame oil, lubricating oil and other inferior substances. They were held by the magistrate for their appearance at court. It was shown at the hearing that the material sold as olive oil was deleterious in its effects on persons in health, and that it is almost certainly of no value and is perhaps dangerous to individuals with impaired powers of digestion.

Health Report.—The total number of deaths reported for the week ended April 21 aggregated 568, as compared with 588 for the previous week, and 455 for the corresponding week of 1905. The principal causes of death were: Typhoid fever, 20; measles, 6; whooping cough, 6; diphtheria, 5; consumption, 73; cancer, 21; alcoholism, 5; apoplexy, 17; heart disease, 54; acute respiratory disease, 97; enteritis, 16; Bright's disease, 32; suicides, 5; accidents, 26; marasmus, 5. There were 357 cases of contagious disease reported, with 27 deaths, as compared with 272 cases and 40 deaths in the preceding week. Typhoid fever is still prevalent and slightly on the increase; 222 cases were reported for the week. In the previous week 198 cases were reported, with 24 deaths. The prevalence of measles is not so severe. The cases reported this week numbered 351, as compared with 389 reported during the previous seven days.

Anatomists Meet.—The Association of American Anatomists, at the regular meeting held in Wistar Institute, April 18, decided that the institute should strive to develop a high grade of research work, maintaining a small corps of the most able investigators in the country. Those present at the meeting were Drs. M. G. Conkling and H. H. Donaldson of the Wistar Institute, Drs. E. P. Mall and Llewellys F. Barker of Johns Hopkins, Drs. G. Carl Huber and J. P. Murich of the University of Michigan, Dr. Charles Minot of Harvard, Dr. George S. Huntingdon of Columbia, Dr. S. H. Gage of Cornell and Drs. E. G. Conkling and George A. Piersol of the University of Pennsylvania. It was decided by the advisory board that the Wistar Institute be hereafter the center of brain

research in America. In order that the work may be properly carried on it will be necessary to collect brains of every race or every mixed race. Dr. H. H. Donaldson of the University of Chicago was elected to take charge of the neurologic work, with Dr. G. S. Streeter of Johns Hopkins University and Dr. S. Hatai of the University of Chicago as assistants.

SOUTH CAROLINA.

Fined for Assault.—In the case of Dr. Edgar S. McDow, Lancaster, charged with assault and battery with intent to kill, and with carrying concealed weapons, the jury brought in a verdict of guilty, and he was sentenced to pay a fine of $250 or to be imprisoned for four months in the penitentiary.

Commencement.—The Medical College of the State of South Carolina, Charleston, held its seventy-sixth annual commencement exercises April 11, when a class of eight received diplomas in medicine. Dr. Francis L. Parker delivered the doctorate address and the degrees were conferred by Major Theodore B. Barker, president of the board of trustees.

TENNESSEE.

Cornerstones Laid.—The faculty of the College of Physicians and Surgeons, Memphis, laid the cornerstone of the new college building with appropriate ceremony, April 22.——The laying of the cornerstone of the Lucy Brinkley Hospital, Memphis, took place March 14.

Presentation.—The senior class of Memphis Hospital Medical College on March 29 presented Dr. Dudley D. Saunders, for many years a prominent member of the faculty, with a goldheaded cane. The occasion was the closing lecture of the fiftieth year of medical teaching of Dr. Saunders.

Academy Meeting.—The annual meeting of the Nashville Academy of Medicine and Davidson County Medical Society was held April 3. The following officers were elected: Dr. William R. Sifford, president; Dr. William Litterer, vice-president, and Dr. Holland M. Tigert, secretary and treasurer.

New Staff at Erlanger Hospital.—The following summer staff came on duty at Erlanger Hospital, Chattanooga, April 1: Dr. Fred B. Stapp, chief of staff; Drs. Thomas E. Abernathy, Clarence A. Cobleigh, Joseph W. Johnson, John S. B. Woolford, Raymond Wallace, German P. Haymore, Robert H. Tatum and William A. Duncan.

Physicians and Dentists Organize.—The physicians and dentists of Humboldt have formed an organization for mutual benefit by study and discussion. Dr. James H. Preston has been elected president; Dr. Benjamin S. Penn, vice-president, and Dr. J. H. Meeks, secretary, of the organization. It was decided also to reorganize the Humboldt Medical Society, amending its constitution so as to provide for the admission of regularly graduated dentists.

Commencements.—The fifty-fifth annual commencement exercises of the University of Nashville, Medical Department, were held March 29. Dr. S. F. Crockett delivered the faculty address after which Chancellor Porter conferred degrees on a class of 42.——Meharry Medical College, Nashville, held its thirteenth annual commencement exercises April 4, when a class of 67 received diplomas. The doctorate address was made by Rev. M. C. B. Mason, Cincinnati.

Federal Control of Quarantine.—The Memphis and Shelby County Medical Society, at its regular meeting, March 20, adopted the following resolutions in regard to the federal control of quarantines:

Believing that federal control of maritime and inter-state quarantine offers the only solution of the prevention and control of epidemic yellow fever, and that this is now the most vital question before the South: be it

Resolved, That the Memphis and Shelby County Medical Society place itself on record as advocating the placing of such quarantines completely in the hands of the federal government. And be it

Resolved, That copies of this preamble and resolutions be sent to the leader of the minority of the U. S. House of Representatives and to the senators and representatives in Congress from Tennessee. And be it further

Resolved, That copies of this preamble and resolutions be sent to the various medical societies of this state and their co-operation in the securing of this action by Congress be solicited.

VIRGINIA.

Want Tax Removed.—A committee from the Petersburg Medical Society has appeared before the finance committee of the council to ask for a removal of the special license tax of $25 on physicians.

Unlicensed "Patent-Medicine" Vendor Fined.—W. H. Burrell, Washington, was arrested April 3 for selling "patent medicines" without a license and fined $30. In default of payment he was committed to jail.

New Hospital.—The Colonial Coal and Coke Company is building and equipping a hospital at Dorchester, to be known as the Kammerer Memorial Hospital. Dr. Morand L. Stallard, Norton, will be at the head of the institution.

Acquitted of Malpractice.—In the case of Dr. Francis M. Morgan, Berkeley, on trial at Norfolk on the charge of criminal malpractice on Mrs. Josephine Davis, the jury acquitted the defendant, March 21, after a deliberation of fifteen minutes.

Gifts for the University of Virginia.—Charles Steele of the firm of J. Pierpont Morgan & Co. has given $50,000, and Miss Helen Gould of New York City, $10,000, to be expended in the completion of the Hospital of the University of Virginia, Richmond. The gift of Miss Gould is to provide a ward for colored patients at the hospital.

Comply with Standard Requirements.—Matriculants at the Medical College of Virginia will hereafter be required to be graduates of a high school or some educational institution of at least equal rank. The same rule applies to the University College of Medicine, that both institutions may be members of the American Medical College Association.

Personal.—Dr. George Ben Johnston, the eminent railroad surgeon, has been elected to the chair of surgery in the University of Virginia and has been made chief of the hospital staff of the university, his services to begin at the opening of the next session.——Dr. William M. Randolph has been elected adjunct professor of surgery in the University of Virginia, vice Dr. William G. Christian, resigned.——Dr. J. S. De Jarnette, Youngs, has been elected superintendent of the Western State Hospital, Staunton.——Dr. William R. Purvis has been reappointed coroner of Alexandria.——Dr. George S. Walker has resigned as assistant superintendent of the Western State Hospital, Staunton.——Dr. Frank S. Hope has qualified as health officer of Portsmouth, succeeding Dr. Norfleet.——Dr. Ennion G. Williams has been appointed a member of the Committee of Health of Richmond.——Dr. Lewis C. Bosher has been elected president of the Memorial Hospital, Richmond, vice Dr. George Ben Johnston, resigned; Dr. John P. Davidson has been elected vice-president and Dr. Charles R. Robbins, secretary and treasurer of the institution.——Dr. Z. Curtis A. Burwell, Salem, physician for the Tidewater Railroad, has resigned and Dr. Johnston has been appointed to fill the vacancy.——Dr. Hack U. Stevenson, Toano, has been elected a member of the State Examination Board, vice Dr. Junius E. Warinner, Brook Hill.——Dr. Ernest Woolfolk, Lahore, who has been under treatment in the Garfield Memorial Hospital, Washington, D. C., is reported to be improving.

WYOMING.

Smallpox.—In the farming districts of Lyman and Bridge, in Uinta County, 57 cases of smallpox are reported.——The entire mining town of Jelm, southwest of Laramie, is under quarantine for smallpox.

Sheridan County Society Meeting.—At the annual meeting of the Sheridan County Medical Society the following officers were elected: President, Dr. F. A. Hodson; vice-president, Dr. C. W. Lawrence; treasurer, Dr. A. G. Hurd, and censor, Dr. F. A. Dolan, all of Sheridan.

Deplores Counter Prescribing.—At a recent meeting of the Sheridan County Medical Association the following resolution was unanimously adopted: "It is the sense of this society that we deplore the too prevalent practice among druggists of counter prescribing and refilling prescriptions without orders; and that we will no longer tolerate the laxness in these things that up to this time has existed."

Personal.—Dr. Harry S. Finney, Rawlins, who has been ill in a hospital in Omaha with typhoid fever, has recovered.——Dr. E. E. Levers has tendered his resignation as superintendent of the Sheridan State Hospital.——Dr. William A. Burgess, Cheyenne, has succeeded Dr. John H. Conway as physician of Laramie County.——Dr. Darwin E. Brown, Laramie, has been appointed surgeon in charge of the hospital of the Diamondville Coal and Coke Company.

State Association Meeting.—At the annual meeting of the State Medical Association, held in Cheyenne, the following officers were elected: Dr. William A. Wyman, Cheyenne, president; Drs. Fred Horton, Newcastle, and Ernest A. Croskery, Wheatland, vice-presidents; Dr. A. Francis Hoff, Casper, treasurer; Dr. Henry L. Stevens, Laramie, delegate to the American Medical Association, and Dr. Alfred C. Godfrey, Lander, alternate. The next meeting of the association will be held in Casper.

THE SAN FRANCISCO CATASTROPHE.

Earthquake and Fire in California—The Problems of Relief and Sanitation.

(Report largely by telegraph from Dr. Philip Mills Jones.)

As all the world knows, San Francisco suffered a violent earthquake at 5:13 a. m., April 18, which wrecked a large number of buildings and broke gas and water mains and electric wires. Fires immediately started which burned for three days and devastated the entire city with the exception of a small portion of the residence section called the "Western Addition," rendering many thousands homeless. A large number, the exact figures being as yet unobtainable, were killed by falling buildings or burned to death. Many hundreds were injured. As all but three or four hospitals in the city were destroyed, the Mechanics Pavilion, a large wooden building, was utilized as a receiving hospital, but only for a short time, as the fire soon reached and destroyed it. The fires broke out simultaneously in so many places and spread so rapidly that all means of communication were cut off and each was obliged to shift for himself. The patients in the various hospitals were removed, some to the Presidio and some to Oakland.

There are probably 125,000 refugees in Oakland, whose citizens are responding nobly to the call for help. Probably 200,000 refugees are quartered in Golden Gate Park, the Presidio, along the water front and the city dumps.

Many hundreds of children are lost and hundreds of others are suffering or dying from exposure and lack of water. One physician reported 75 stillbirths in two days. The sufferings of women, and especially of children, are too horrible to describe.

There is little danger now of suffering from starvation, as supplies are being rushed in by military authorities, by relief trains from New York, Chicago, Denver and other cities, and by the Masonic fraternity, the Elks, Odd Fellows and other fraternal organizations. It will be some time before the homeless people have shelter, although tents have been supplied by the government and the city has started the erection of barracks in Golden Gate park to accommodate 15,000.

No Epidemic.

Although there has been considerable smallpox in the city for several months, only a few cases are now reported. Scarlet fever and typhoid fever have appeared among the refugees, but this is no epidemic. General Funston has ordered a large supply of vaccine virus, and 10,000 points were sent from Chicago on the relief train which started April 23.

Valuable Co-operation of Military Force.

Soldiers, sailors, marines and national guardsmen have been rushed into the city, but still there are not enough adequately to protect life and guard property. General Funston at once took command of the situation and co-operated with the local authorities in bringing order out of the chaos following the disaster. The United States General Hospital at the Presidio and the barracks were at once offered for the sick and injured, and the work of relief is being carried out under proper discipline and with military exactness. Tents have been sent from the various Army posts, and hundreds of thousands of rations have been furnished by the various commissaries.

Water and Sewers.

The water supply of the system was at first entirely cut off by breaks in the city mains, but now, by adjustment and repair, a daily supply of about 7,000,000 gallons is available. The sewer system is damaged to an unknown extent. The manholes in the streets have been screened and are used for water closets.

As practically all chimneys in the city are ruined, all cooking, even in the unburned section of the city, is done in the open air, on the streets.

Physicians Do Noble Work.

The medical profession of San Francisco, Oakland, Berkeley, and other cities have done noble and self-sacrificing rescue work and are now caring for the sick and injured with untiring zeal. Physicians have come in from neighboring cities, and at least two more distant cities have sent medical aid. Portland has sent 10 physicians, 20 nurses and large quantities of medical supplies, under the charge of Dr. Kenneth A. J. Mackenzie. Chicago sent 27 physicians, 75 nurses, and large quantities of disinfectants, medicines, dressings and invalid foods, on trains which should arrive there April 26. This party is sent by the American White Cross First Aid Association, under the auspices of the Citizens' Association of Chicago, and is in charge of Major P. J. H. Farrell, late U. S. V. and Captain Joseph B. Greene, late of the U. S. P. H. and M. H. Service, and includes Drs. F. W. Phelps, N. Reed, G. W. Mosher, J. D. C. Hill, Milton Mandel, Rex Brown, F. W. Alpin, J. S. Nagel, B. von Wedelstadt, George Ruben, Orville W. McMichael, F. G. Harris, Clyde D. Pence, Arthur Claggett, Joseph Replogle, J. C. Cowan, Edgar Lee, F. J. Otis, Thomas W. Lewis, W. H. Witherstine, D. A. Smalley and H. J. Haiselden.

A special train left Los Angeles for San Francisco April 19, with 75 physicians and nurses.

Medical Society of the State of California.

The society met for its fiftieth annual session in San Francisco, April 17. The program was unusually good and the attendance large. On the morning of April 18 a violent earthquake occurred, wrecking a large number of buildings, including the Y. M. C. A. building in which the meetings were being held. At 9:30 the same morning the president, Dr. Robert F. Rooney, the secretary, Dr. Philip Mills Jones, San Francisco, and Drs. H. Bert Ellis, Los Angeles, James H. Parkinson, Sacramento, and Fitch C. E. Mattison, Los Angeles, met in front of the wrecked building and declared the society adjourned sine die.

All records and files of the society are a total loss, but the accounts and funds are safe. The library of the San Francisco County Medical Society and its records are destroyed.

The Dead.

It is impossible as yet even to estimate the mortality, but our correspondent believes that the deaths will exceed 5,000. On April 24 a list of 277 dead was reported. The coroner of San Francisco County estimates the dead at 1,000.

Dr. J. C. Stinson was killed in the California Hotel by falling bricks, and Dr. Charles F. Taggart, Los Angeles, who had charge of a corps of nurses at the Crocker School Relief Hospital, died from a gunshot wound caused by his own revolver, which fell from his pocket and was discharged. These are so far the only deaths of physicians in the city.

Personal.

The president of the state society, Dr. Robert F. Rooney, Auburn, was at the Palace Hotel, but was obliged to leave, and went to the St. Francis Hotel, and was ordered out on account of the danger. His present whereabouts are unknown, but he is reported to be safe.——Dr. Philip Mills Jones and wife are safe in Oakland.——Dr. George H. Evans started for New York April 21 and reached Chicago April 24. ——Dr. Donald McC. Gedge has been made chief of the newly-organized vigilance committee, which has in charge the Golden Gate valley district near the Presidio.——Dr. William C. Voorsanger has been placed in charge of the committee on food supplies.

Effect at Quarantine Station.

Passed Assistant-Surgeon Hobdy reports that a moderate amount of damage was done by the recent earthquake at the San Francisco Quarantine Station, but that no one was injured. The service at quarantine will not be interrupted. Surgeon Sawtelle reports, in *Public Health and Marine Hospital Reports*, that all the Marine Hospital buildings are more or less damaged, though the hospital can still be used. No one was seriously injured at the station. As many injured citizens as can be accommodated are being admitted to the marine hospital, the city institutions being unable to care for the large number of the wounded. Dr. Sawtelle also states that the buildings in which the branch marine hospital was located in the city is entirely wrecked.

THE CALIFORNIA FUND.

Subscription List Opened for Relief of Physicians in Need.

As announced in the editorial columns, the Board of Trustees has authorized that the columns of THE JOURNAL be opened for subscriptions to a fund for the relief of those physicians of San Francisco and other points in California who have been left in destitute circumstances through the earthquake and fire. A local committee has been created in Chicago to have supervision of the fund in behalf of the American MedicalAssociation. This committee consists of: Dr. Frank Billings, Treasurer of the American Medical Association, Chairman; Dr. M. L. Harris, Resident Trustee of the American Medical Association; Dr. C. S. Bacon, Chairman of the Section on Obstetrics and Diseases of Women, and President of the Chicago Medical Society; Dr. R. B. Preble, Chairman of the Chicago Medical Society Committee; Dr. George H. Simmons, Editor of THE JOURNAL of the American Medical Association.

The following telegram was received April 24 through Surgeon-General O'Reilly of the United States Army:

To the Editor:—About five hundred San Francisco physicians destitute, diplomas destroyed. Brave, resolute, still working like Trojans for fellowmen. Association should come handsomely to relief. Many will emigrate. All states should receive qualified without cruel restrictions. My subscription one hundred dollars.

KENNETH A. J. MACKENZIE,
Second Vice-President American Medical Association, in charge of Harbor View Hospital for contagious diseases

The following letter was received April 23:

To the Editor:—I would suggest that the American Medical Association appeal to the physicians of the United States for financial assistance in order to aid physicians in San Francisco, who have lost all they possessed in the recent horrible disaster. A committee of physicians living in San Francisco could be appointed to carry out any or all suggestions made by the A. M. A. I gladly send my check for $2, and trust the fund will rapidly grow.

Rochester, N. Y. W. D. WOLFF, M.D.

Subscriptions are solicited from those who feel able to give. Make checks payable to the American Medical Association, marking the check "California Fund." Send them to the American Medical Association, 103 Dearborn Avenue, Chicago. Mark envelope in lower left-hand corner, "California Fund." Acknowledgment will be made in THE JOURNAL of each contribution. Local or county societies that wish to contribute as a body through the Association Fund, may do so and credit will be given to the society and the names of the individual contributors will also be printed.

The following contributions have been received:

INDIVIDUAL CONTRIBUTIONS.

T. J. Happel, Trenton, Tenn.	$ 5.00
Kenneth A. J. Mackenzie, Portland, Ore.	100.00
Philip Marvel, Atlantic City, N. J.	50.00
Lewis S. McMurtry, President American Medical Association, Louisville, Ky.	100.00
E. E. Montgomery, Philadelphia	25.00
Miles F. Porter, Fort Wayne, Ind.	10.00
William H. Welch, Baltimore	25.00
W. D. Wolff, Rochester, N. Y.	2.00
A. L. Wright, Carroll, Iowa	25.00
Total	$342.00

CHICAGO MEDICAL SOCIETY CONTRIBUTIONS.

The following amounts were received through the committee appointed by the Chicago Medical Society:

Adolphus, Philip	$10.00	Harris, M. L.	$25.00
Bacon, C. S.	25.00	Hecht D'Orsay	10.00
Banga, Henry	25.00	Hotz, F. C.	25.00
Baum, W. L.	50.00	Jackson, Thomas J.	5.00
Bauer, E. F.	2.00	Kahlke, Charles E.	15.00
Beard, Charles H.	5.00	Kerr, J. Norman	5.00
Blayner, F. H.	5.00	Kleene, F.	5.00
Billings, Frank	100.00	Leenheer, C. A.	2.00
Broell, A. C.	10.00	Linnell, B. M.	5.00
Brown, Heman H.	10.00	McGuire, J. W.	10.00
Brown, Richard H.	10.00	Miller, R. B.	5.00
Burroughs, W. M.	2.00	Monash, D. F.	5.00
Campbell, James T.	10.00	Morf, Paul	5.00
Carter, J. M. G.	5.00	Murphy, John B.	100.00
Chamberlain, George M.	100.00	Nelson, Daniel T.	5.00
Coleman, W. F.	5.00	Noble, W. L.	5.00
Danforth, I. N.	25.00	Oyen, A. B.	5.00
Deming, H. H.	10.00	Paddock, Charles E.	10.00
Elliott, Arthur	5.00	Patton, J. Allen	5.00
Frankenstein, V. S.	5.00	Perekhan, J. S.	2.00
Frick, Anders	10.00	Peterson, Herman D.	5.00
Futterer, Gustav	25.00	Physicians' Club	100.00
Gillmore, Robert T.	25.00	Plecker, J. N.	5.00
Gorgas, L. D.	5.00	Preble, Robert B.	25.00
Gray, Ethan A.	10.00	Riebel, E. E.	5.00
Hardie, T. Melville	10.00	Shambaugh, George S.	5.00
Simmons, George H.	$25.00	Wescott, Cassius D.	$10.00
Slaymaker, S. R.	5.00	Wheaton, Clarence L.	5.00
Snydacker, E. F.	5.00	Wiener, Alex. C.	5.00
Soper, Alex. C.	25.00	Wilder, W. H.	10.00
Spaulding, D. N.	5.00	Will, H. C.	2.00
Talbot, Eugene S.	20.00	Wood, Allport and Woodruff	100.00
Watkins, Thomas J.,	25.00	Zeisler, Joseph	25.00
Wellington, R. H.	3.00		
Total			$1,023.00
Grand total			1,365.00

The following telegram was received Thursday afternoon after about half of this edition was printed:

[Special Telegram.]

SAN FRANCISCO, April 26, 1906.

There are few outside physicians in San Francisco now; the local profession is caring for the sick. Many city men who have been burned out and whose regular practice is gone are doing public charity and sanitary work.

NEED MEDICAL AND SURGICAL SUPPLIES.

There is great need of drugs and medicines, as well as gauze, sutures, vaccines, forceps, clinical thermometers, scissors and scalpels. Many physicians and specialists lost all their instruments and equipments, and such as can be sent will be gratefully received. All the supply houses are gone. Supplies may be sent to the health office, care of Dr. E. N. Ewer, Oakland.

SANITATION BEING WELL CARED FOR.

Sanitary conditions in the city are better than expected and large numbers of extra health officers are appointed. Soldiers are compelling citizens to keep the streets and camps clean and to use the toilets which have been provided and carefully constructed. Dr. Foster, secretary of the State Board of Health, reports after careful examination that there are few contagious diseases and practically all are quarantined.

FOOD PLENTY—SHELTER BEING PROVIDED.

There is no present lack of food or clothing, and all homeless will be under shelter in two days more free from danger. Many diseases are due to exposure. The rapidity with which the situation is grasped and managed is surprising to all of us; the control of sanitation is especially excellent.

At least 500 doctors will be left destitute and call should be made for some funds for their relief.

PHILIP MILLS JONES.

1230 Telegraph Avenue, Oakland.

CANADA.

Branch of British Medical in New Brunswick.—The St. John (N. B.) Branch of the British Medical Association has been organized with Dr. Murray MacLaren as provisional chairman and Dr. J. H. Scammell as secretary. Twenty practitioners in that city signified their intention of becoming members. The other branches of the British Medical Association in Canada are the Halifax, Montreal and Toronto branches.

Hospital News.—Some difficulty is being experienced in getting the bill regarding the Toronto General Hospital through the Ontario legislature, owing to the fact that there is a strong opposition to the clause which states that only the medical students of Toronto University shall have clinical privileges in this hospital. As McMaster University, a Baptist institution, has some ambition to embark on medical education, having gone so far as to make an offer for a fine site for a building, in the vicinity of their university, it is felt by some of the legislators that this privilege of clinical instruction should not be exclusive. In all likelihood the clause will be amended to provide for other students as well as those of Toronto University, availing themselves of the privileges of the hospital.——Grace Hospital, Toronto, at one time a homeopathic hospital, but now a general hospital, will shortly erect a substantial addition at a cost of $200,000. It will provide for an additional 100 patients. This hospital has a staff of 45 doctors and 35 nurses. ——The Victoria Hospital for Sick Children, Toronto, will receive $2,000. The famous bribery money handed into court three years ago, when the notorious Gamey political investigation was in process of ventilation, has been disposed of in this way.——The Toronto Western Hospital will erect two large additional wards for charity patients, with accommodation for 100 patients.——Winnipeg General Hospital treated 348 patients during the week ending April 14, 201 being men, 99 women and 48 children.——A new general hospital was opened at Moosejaw, Sask., on April 17.——The Vancouver General

Hospital is seeking a new medical superintendent, Dr. Robertson having resigned to enter private practice. The Vancouver Medical Society has forwarded to the board of trustees a recommendation that only a registered practitioner of British Columbia be appointed.——New Westminster, B. C., will erect a new $50,000 hospital, toward which the provincial government of British Columbia has contributed $15,000.

FOREIGN.

Fifth International Antituberculosis Conference.—The central committee of the society in the Netherlands organized for war against tuberculosis has invited the authorities to hold the international tuberculosis conference for this year at The Hague in September.

Homeopathy and Regular Medicine in Germany.—The federation of medical societies in Germany, known as the *Deutscher Aerztevereinsbund*, was recently asked to admit the Association of Homeopathic Physicians. The federation formally declined, stating that homeopathy is the negation of medical science.

Association of Medical Legislators.—There are always a large number of medical men elected to the French national legislature. About twelve years ago they organized an extra-parliamentary association for discussion of matters especially affecting the public health and the sociologic aspects of medicine. Italy has followed with the organization of a similar group and the physicians in the British house of commons have just taken a similar step.

Treatment of Seasickness.—E. Wolf, the German explorer, says that very hot compresses applied to the brow and constantly renewed will relieve and cure seasickness almost without fail. The patient must lie still, eat nothing except, possibly, unsweetened tea and toast. An hour or so of the hot applications to the brow have always cured in the severest cases of seasickness in his experience, even in the stormiest weather.

Honors to Americans.—At the formal session of the Royal-Imperial Medical Society of Vienna, Austria, on March 30, honorary membership was conferred on Nicholas Senn of Chicago, W. H. Welch of Baltimore and O. Schmiedberg of Strasburg. Six corresponding members in this country were appointed: J. J. Abel and John C. Hemmeter of Baltimore, C. Herter, L. Emmett Holt and Graham Lusk of New York, and J. Loeb of the University of California. The official title of the society is the Königliche-Kaiserliche Gesellschaft der Aerzte in Wien.

His to Take Ebstein's Place.—Wilhelm Ebstein retires from the chair of medicine at Göttingen this spring, and W. His of Basle has been invited to take his place. Ebstein will be 70 years old next November. The list of his important publications is a long one and includes a number showing great historical research. Among the latter is one on the "Plague of Thucydides." His "Manual of Practice of Medicine" has passed through numerous editions since first published in 1899. His name is especially connected with diabetes, leukemia and gout. Wilhelm His is 43 years of age at present, and was assistant to Curschmann at Leipsic until called to Basle. He has published works on gout, on the embryonal heart and the development of the cardiac nerves in the vertebrates. One of his most recent communications was a study of pleural and other effusions.

Fifteenth International Medical Congress.—This international gathering of physicians and surgeons was formally opened at Lisbon, April 19, by the king of Portugal. Each civilized country had sent delegates, and more than 250 men of international fame had been invited to deliver the official addresses on 140 of the vital medical topics of the day, and nearly all had accepted and were present on the opening day. Nicholas Senn's address on the "International Study of Carcinoma," published elsewhere in this issue, was delivered at one of the five general assemblies. He proposed to offer a prize of $1,000 for research on carcinoma. The delegates appointed by the German government were Quincke, Curschmann, von Behring, Neisser, Loeffler, Garré, Verworn, Heller, Rubner and Posner. The army was further represented by Kern, the navy by Elste and Martini. France and Great Britain sent equally representative delegations. The American delegation was mentioned recently on page 1044.

Death of Professor Curie of Paris.—The cable brings word that the great chemist who shared with his wife the honor of the discovery of radium, was run over by a dray in the streets April 19. The story of his life has been often told: his marriage to the young Polish woman who was such an ardent student in the laboratory for physical research in his charge, their six years of research together on the uranic radiation discovered by Becquerel, terminating in their announcement in 1898 of the discovery of the new substance, radium, which shook the foundations of some of the most fundamental scientific theories, including the atomic theory and that of the conservation of energy. The Nobel prize for scientific research was awarded to them in 1903, and the Osiris prize of $12,000 was later given to Mme. Curie. Professor Curie was convinced that all the wonderful properties of radium have not yet been learned, and he and his wife were still deeply engrossed in its study. His shrinking from publicity was so great that he seldom accepted any of the numerous invitations to lecture which came to him, and he was a poor speaker. The cable dispatch says that the premature death of this simple-lived, retiring scientist before he had completed his research on the possibilities of radium may be an event of greater actual importance to humanity than the horrors of earthquake and fire. Nothing is known at this moment of the special research on which he was engaged at the time of his death, but his mental absorption in it may have been in part the cause of the fatal accident. He leaves a daughter 8 years old.

August Bier.—Few names have been mentioned more frequently in our columns during the last year or so than that of Professor August Bier of Bonn. He has led the way into new fields where few, if any, had preceded him, and no one mentions spinal analgesia, or the application of superheated air or artificial passive congestion in therapeutics without some reference to Bier's pioneer work. His latest revolutionary announcements in regard to the importance of artificial hyperemia or passive congestion as an aid in the treatment of acute inflammations have attracted world-wide attention. As recently mentioned, he has been awarded the newly-founded Kussmaul prize. On this occasion the *Muenchener med. Wochft.* published an excellent portrait of him which we herewith reproduce. Much of his training was received under Esmarch. He is now 45 years of age. Summaries of his communications are scattered through the last volumes of THE JOURNAL. In vol. XLI, on page 68, paragraph 146, and in vol. XLII, on page 807, paragraph 81, will be found summaries of his communications in regard to hyperemia as a curative measure. On page 1260 of vol. XLII his pioneer work on spinal analgesia is reviewed. His more recent announcements in regard to the value of passive congestion in treatment of acute inflammations were reviewed on pages 914 and 1075 of vol. XLIV, and also on page 1206 of vol. XLV. See also page 1324, paragraph 48, in this issue.

AUGUST BIER.

Escape of Miners Buried for Twenty Days at Courrieres.—The *Presse Médicale* states that thirteen of the miners were rescued after having been buried in the mine for twenty days, and another miner was found alive five days later. The thirteen miners were together and managed to keep alive by eating oats, bark and rotten meat, the only edibles within their reach. Their survival in the toxic gases of the mines, without light and almost without air, subsisting on rotten meat, quenching their thirst with urine, defies scientific theories. Besides their endurance and resistance, the spirit of discipline and comradeship which they displayed was equally remarkable as they wandered around in the closed subterranean galleries of the mine, crowded with the corpses of their mates. The Paris *Tribune Médicale* is preaching the necessity for supplies of oxygen to be kept on hand in mines and in submarine boats, etc. All the survivors testified to the fact that the air in the mine was absolutely irrespirable only during the first few hours after the explosion. If there had been a supply of oxygen to have tided them over the first few hours, hundreds more might have been saved. The editorial states that the hygiene of mines should be entrusted to medical men, to physicians trained in physiology and hygiene. The mechanical mining engineer has charge of the mechanical part of the business, but medical skill should guide the exploitation of the human motor. Whenever an explosion has taken place it is generally

learned that the air had been impregnated with firedamp for some time. It frequently happens that the air in a mine is at times so loaded with firedamp that only a spark is needed to produce an explosion. The absence of the spark prevents any trouble. The editorial urges that three samples of air should be taken at a time, three times a day. One sample should be tested, and one sample be kept by the officers of the mine, and the other sample by a delegate from the miners. In this way it would be possible to detect increasing contamination of the air, and, in case of an explosion, to place the responsibility where it belongs. Then, if any explosion occurs, the survivors should have supplies of oxygen within reach at different points in the mine. (See editorial in this issue, p. 1289.)

The Lost Lambs of Medicine.—The *Progrès Médical* of Paris and some other medical journals occasionally devote space to interviews with more or less prominent people who began life as physicians, or at least completed their medical course, but were then diverted into other fields. All express great appreciation of the remarkable aid their medical training has proved in their later life-work. Writers especially have found it of great benefit. The latest sketches of the kind are of the director of a Paris theater and of a member of the Comédie Française. The latter, Dr. Paul Mounet, remarked in the course of his interview, that the medical course is the most difficult of all, but it prepares for anything and everything.

Comparative Study of Tropical Hygiene.—The *Semaine Médicale* for April 11 contains an article by a French navy surgeon, Dr. Gloaguen, who has been cruising in the waters along the eastern coast of Africa, making a special study of the medical conditions in the various English, German and French colonies. He says that he was surprised to find that the British are behind the Germans in the matter of making and keeping their possessions healthy. The English fall back on their egotism and individual hygiene; the Germans on their inflexible militarism, and the French on their proverbial heedlessness. The English conception of prophylaxis is very simple. It is based on two things: entire separation of the native and the European villages, and strict application of the principles of private hygiene. The English lead an active life, with athletics, etc., to keep mind and body in a healthy condition; they reside in comfortable cottages, but they make no effort to render the country healthier and improve the sanitary conditions of the natives. There is no attempt at a general plan of campaign against tropical diseases. The native quarters are left in their filth and fall an easy prey to diseases. Plague is installed in nearly all the British colonies on the Indian ocean, and with the exception of Isle Maurice, no satisfactory measures have been taken even against malaria. The Germans, on the other hand, have undertaken the task of exterminating disease among the natives and Europeans alike. The same sanitary measures are enforced in the native as in the European quarters. Hospitals are being organized at the main points, and the country is divided into districts, each in charge of an agent empowered to enforce the sanitary regulations. Medical stations are organized along the caravan routes, and the natives are examined and registered and given certificates. Laboratories are numerous. The streets in the native quarters have been made wide and airy and are kept clean. The garbage is carted away daily instead of being allowed to accumulate around the houses as in the English and other colonies. Standing waters are drained or oiled. The French are now trying to introduce some semblance of the German measures into their colonies and with some success. Quinin prophylaxis has been introduced by the Germans on an extensive scale at Dar-Es-Salaam. The native quarter is divided into 22 precincts, and they are visited by trained men and women, who obtain blood for bacteriologic examination. In 1897 between 50 and 60 per cent. of the Europeans had malaria. The antimalaria campaign was commenced in 1901, and in two years the number of cases of malaria among the Europeans had dropped to 10 per cent., with no mortality. Scarcely one in a thousand of the natives now harbors the malaria parasite, and the results are considered a brilliant success. Gloaguen prefaced his article with the statement that wherever he went in the French colonies he constantly heard the complaint: "If only this country belonged to England, it would have been made healthy long ago." In his criticisms he overlooks the British idea in regard to governing colonies. The general aim of the British is to make the yoke light and to disturb the native habits and customs as little as possible. Their ideal is education, principally by example.

Correspondence

The Death of Dr. Stinson at San Francisco.

CHICAGO, April 24, 1906.

To the Editor:—The Dr. Stinson who was one of the first victims of the San Francisco horror was the author of the automobile article in your last issue. At the time I addressed the San Francisco County Medical Society last July I was the recipient of exceptional courtesy at his hands. An hour after my arrival he was at my hotel with the car he describes and his experienced chauffeur. He insisted that I make use of his car during the few days I was in San Francisco as if it were my own. He asserted kindly and positively that he needed exercise and would walk.

Many members of the American Medical Association who were visiting San Francisco directly after the Portland session will now recall, with a saddened interest, the delightful excursions to the Presidio and Golden Gate Park which Dr. Stinson's extreme courtesy made it possible for them to make with me. I am informed by his friends that the walls of the California Hotel fell on him while he was asleep and killed him instantly. He was a brilliant practitioner, a successful surgeon, and his death will mean much to many of the first families of San Francisco. He was a stranger to me when I arrived in California, but his hospitality was so genuine and sincere that his sudden taking off is in the nature of a personal bereavement. DENSLOW LEWIS.

Need for Additional Nomenclature.

NEW YORK, April 21, 1906.

To the Editor:—Permit me to say to Dr. Thomas G. Atkinson's proposition under the above heading in THE JOURNAL, April 21, that wherever additional nomenclature is needed we should not accept terms like Dr. Atkinson's hemafecia and pyofecia; our onomatology is disfigured already by such monstrosities and needs reform instead of new horrors. A. ROSE.

Warns Against Alleged Impostor.

NEW YORK, April 20, 1906.

To the Editor:—A physician calling himself "Dr. Ernest Sachs" is traveling about the country as an agent of "The Swiss Goat-Lymph Serum Compound," recommending its use in the treatment of locomotor ataxia and other nervous diseases. He claims to be a brother of mine and is using my name in order to palm off this serum on a credulous public. I wish to state that the man is no relative of mine, that I do not know him, and that those who know me will not need to be told that I am not one of those likely to recommend "goat-lymph serums" or any other similar remedies (?). I have every reason to believe that the man is an impostor. He claims to have been connected formerly with the German Hospital in New York City, and I understand that at that institution his name is entirely unknown.

B. SACHS, M.D.

Medical Men in Congress.

WASHINGTON, D. C., April 21, 1906.

To the Editor:—An item with the above title appears in the last issue of THE JOURNAL, April 21, under the head of "Medical Legislation." The author may not have intended to name therein all the medical men who are at present members of the Fifty-ninth Congress, in which event he succeeded; if it was intended to include them all, and this might be inferred from the title, the person who prepared the article was rather careless or did not have access to the Congressional Directory. In the last thirty years there has scarcely been a congress without more or less medical men, some having retired from active practice long before entering congress, while many have gone from the active practice of their profession to the highest legislative body in the land.

One of the latter class—and he is not mentioned in this article—is Edmund William Samuel, M.D., of the sixteenth

district of Pennsylvania. A part of his biography, which may be found in the Congressional Directory, is as follows:

"Edmund William Samuel, M.D., Republican, of Mount Carmel, was born Nov. 27, 1857, in England; at the age of 2 years moved with his parents to Ashland, Pa.; at 8 years he was employed as a slate picker in a coal breaker, worked about the coal mines in summer and attended the public schools in winter. He entered Jefferson Medical College in 1878, at Philadelphia, and graduated therefrom March 13, 1880; the same year began the practice of medicine, which he has followed continuously to the present time."

Drs. Burton, Barchfeld and Samuel (Regulars) are members of the House, going directly from active practice to this body, this being their first term. John Wesley Gains, sixth district of Tennessee, graduated in medicine from the University of Nashville and Vanderbilt University in 1882, and immediately began the study of law; he never practiced.

Dr. Gallinger (Homeopath), the medical member of the senate, has not been in active practice for many years.

More of the members of the Fifty-ninth Congress may be graduates of medicine, but I am unable to trace them.

W. F. WAGNER, M.D.

The N. S. Davis Memorial.

BOSTON, April 23, 1906.

To the Editor:—I am sure your readers will be glad to know, through the columns of THE JOURNAL, something of the progress which is being made by their committee in the raising of funds for some suitable memorial to the late Dr. N. S. Davis of Chicago.

I am delighted to report that the committees from each of the several states have already taken up the work with enthusiasm. It is the purpose of your committee to make this movement in honor of the founder of our great Association an especial honor and privilege to every member. The sum of 25 cents each would aggregate a total ample for this purpose, and your committee feels that such universal remembrance would be an honor and a privilege to every one of the great army of over 100,000 physicians to be sharers. It is the desire of your committee that the contributions shall be small from the many rather than large from the few. It is preferred that these contributions be sent through the state committees, but any one who desires to contribute for this purpose directly to me will receive proper acknowledgment therefor.

HENRY O. MARCY, Chairman.

180 Commonwealth Avenue.

Association News

Transportation.

The railroad rates to the Boston session from the eastern half of the country will be one fare, plus $1.00, for the round trip. In the Trans-Continental Passenger Association territory the rate will be about a fare and one-third to Chicago, Minneapolis, New Orleans and St. Louis, and from these points on to Boston the rate above mentioned. The southern passenger associations are yet to be heard from, but they will probably make the same rate of one fare, plus $1.00, for the round trip. A more detailed announcement will be given in THE JOURNAL May 5.

Hotels in Boston.

A list of the hotels and headquarters in Boston, with the cost of rooms, was given in THE JOURNAL, April 7, page 1046, and this list will reappear next week, May 5, in the special Boston Number. The committee on hotels states that members of the Association are still writing them for information which is contained in this announcement and we, therefore, call attention to the list. Last week, April 21, supplementary announcement concerning the boarding places was given.

The Boston Number.

The issue of THE JOURNAL, May 5, will be the Boston Number, containing a specially written article concerning its historical points and the special medical opportunities. This article will be liberally illustrated with fine pictures. There will also be preliminary programs of the general meetings and sections, list of hotels and headquarters, particulars of railroad rates, excursions, entertainments, and all possible other information. The indications are that there will be a very large attendance.

Second Annual Conference of Council on Medical Education.

The second annual conference of the Council on Medical Education of the American Medical Association will be held at the Auditorium Hotel, Chicago, May 12, 1906. There will be two sessions, beginning at 10 o'clock and 2 o'clock. A large delegation is expected, representing state examining boards, government medical services, medical college associations, colleges of liberal arts, and teachers' associations. Besides the report of the year's work by the council, the program will consist of addresses from prominent educators and others. The subjects of preliminary educational requirements, the granting of advanced standing for work done in colleges of liberal arts, and what constitutes a proper medical curriculum will be discussed.

Miscellany

FRAUDULENT USE OF THE MAILS.

Another Pseudo-Medical Company Is Debarred by the Government from Use of the Mails.

The postoffice department is continually investigating fraudulent companies which use the United States mails to further their schemes. Whenever the business of a concern is shown to be fraudulent the firm is forbidden the use of the mails. Many of these companies are medical, reports in regard to some of which we have already published. This week we give space to the report of the investigation of the Nutriola Company, made by R. P. Goodwin, assistant attorney general for the postoffice department. In accordance with this report a fraud order was issued Nov. 24, 1905, debarring the Nutriola company from the use of the mails. Hanson, we understand, is now in the penitentiary. From this report we quote as follows:

The Nutriola Company is a Maine corporation, organized about 1894, with authorized capital stock of $150,000, divided into 150,000 shares of the par value of $1 each. The capital stock has since been increased to $500,000. Edward F. Hanson is the promoter of this scheme, with principal offices at 142 to 148 West Madison Street, and branch office at 130 Dearborn Street, Chicago, Illinois. The principal business of the company is that of selling its stock on the installment plan to small investors throughout the country; its ostensible business is the manufacture and sale of certain medical preparations known as "Nutriola" and "Nutriola Preparations." The mail is the principal instrumentality used in the conduct of the business, and practically all of the stock that has been disposed of has been sold through that medium. The sale of stock has been accomplished by advertisements, and the dissemination of various pamphlets and circulars through the mail.

I have examined and considered very carefully the report of the inspectors, giving the result of their invstigation of this matter, together with the papers submitted therewith; the written statements and briefs of the attorneys for the company, and the matters adduced in the oral argument of its counsel; the reports of the department of agriculture as to the therapeutic qualities of the medicine of the company, and the other circumstances and facts disclosed in the case, and am convinced that the sale of capital stock of this company has been, and is being acomplished through the mails as a result of misrepresentation and deceit. The reasons for this conclusion are stated below:

1. One of the principal arguments made by the company to induce the purchase of its stock is that investors will secure

an interest in a company which will earn tremendous profits by reason of the fact that the medicines sold by it are new and wonderful, and that they were only discovered after years of study and research, made by the most skilled chemists and physicians, whom the company had employed, and after the expenditure by the company for such expenses of over $50,000 in cash. The representation that the formulas for these medicines were only discovered by the company after the expenditure of over $50,000 in cash I find is false and unwarranted. In a pamphlet used by the company for the promotion of the sale of its stock, and entitled, "Health, How Gained and How Retained," on the third page appears this statement:

"THE TRIUMPH OF PHYSIOLOGY AND CHEMISTRY.

"For nearly ten years our Chemists—aided by the best physicians in the U. S.—worked with these facts ever before them. Worked to aid nature by creating perfect Digestion and perfect Assimilation. By increasing the army of Leucocytes and giving them strength to destroy all disease germs, by supplying Nature power for perfect Elimination of Dead diseased matter. By supplying constructive material to make Red Blood Corpuscles from which Nature could draw material to replace every wornout and diseased cell, thus making *the body new all over.*

"*Cost us $50,000 cash.*

"It was a great undertaking, worthy of the age. It cost us $50,000.00 cash, but *we succeeded*, and to the world we give the greatest Chemical-Medical Preparation ever prepared by the skill of man. It's Nature's right arm of power. We named it *Nu-tri-ola*, and we emphatically state that *Nutriola and Nature are the only invincible conquerors of disease ever known.*"

Some of the circumstances and facts which satisfy me of the falsity of this representation are as follows:

Mr. Hanson was asked this question by the inspectors:

"Q. It is noted in your literature that you have expended something like $50,000, or a large sum of money for experimenting and perfecting the Nutriola remedies. A. The amount stated in our literature should be approximately $40,000, and it covers the entire formative and experimental period during which preparations were prepared in various forms. The company advertised for so-called incurable cases, supplying treatment free, where necessary employing physicians to give the remedies and watch the results. Among these physicians was Dr. L. W. Hammons, city physician of the City of Belfast, Maine; Dr. McCurdy, of Searsmont, Maine, now deceased; Dr. Hitchcock, of Rockland, Maine; Dr. Luce, of Boston; Professor E. L. Patch, of Stoneham, Massachusetts, was the chemist who prepared the Nutriolo Ointment known as Skin Food, and under whose supervision every particle offered for sale is now made. Dr. Stockwell, Parke, Davis & Company's leading chemist, rendered valuable assistance. The amount paid the chemists I am unable to state, as I have no record or vouchers therefor, and the original books of the company were burned in the fire in 1895 or 1900, with all papers and vouchers. Q. Please name the chemists who now manufacture the remedies of the Nutriola Company. A. Parke, David & Company, Detroit; E. L. Patch Manufacturing Company, Stoneham, Massachusetts; Seabury & Johnson, New York."

Regarding these statements of Mr. Hanson, the inspectors report:

"The proposition that it cost $50,000 for the services of chemists and physicians in the making of this discovery is explained and modified by Mr. Hanson on page 3 of his statement.

"It might be mentioned that Professor Patch, of Stoneham, Mass., is presumed to be connected with the manufacturing chemists firm of E. L. Patch & Company, Stoneham, Mass. Dr. Stockwell is the chemist of Parke, Davis & Company, also manufacturing chemists. It is commonly known that large manufacturing chemical houses have always in their employ erudite and competent chemists who render their services and advice free to patrons of the house in the matter of suggesting desirable formulæ for proprietary medicines, which are subsequently to be manufactured at a profit to them."

The representation of the company is that as the result of the expenditure of this $50,000 it has discovered certain preparations which are new and not known to the medical world, and which possess wonderful curative properties. For report as to the therapeutic qualities of these medicines and to ascertain if there was anything new or wonderful about them, samples of the same were submitted to the department of agriculture. The formulæ for the medicines were later secured from the company and also submitted to that department for its consideration in connection with its analysis of the medicines. The report of the department of agriculture, dated Oct. 13, 1905, has been received, and I quote from it as follows:

"From a careful investigation of the formulæ submitted, the chemical analyses made and the advertising literature, I am led to the following conclusions.

"1st. There is nothing new or wonderful in the agents used in the preparation of the several remedies. All of them have been in use for many years, excepting 'Phytiline,' 'Sicbiencen' and 'Ferrum Acetine.' No reference in literature to either 'Phytiline' or 'Sicbiencen' could be found, and I believe they are either misspelled words or 'blinds.' 'Ferrum Acetine' may be used by this firm in the treatment of disease, but no medical authority recognizes it as a therapeutic agent.

"2nd. The proportions used of the various agents in the several mixtures are withheld, but even so, it may be safely stated that there is nothing particularly new in the combinations of the various ingredients, the forms of the combinations or methods of combination. They differ no more from other similar combinations than one physician's prescription differs from that of another, using the same or similar active constituents, or the procedure of one pharmacist in filling a prescription differs from that of another pharmacist.

"3rd. Remedies prepared according to the formulæ which are submitted by the Nutriola Company, as the ones used in the manufacture of its remedies, are well known and useful combinations employed in the treatment of diseases.

"4th. The Company makes numerous exaggerated and misleading statements relative to the efficiency of these remedies in various parts of its advertising literature, some of which can not possibly be construed as coming within the domain of privileged business methods. It is believed that fraud would be imputed, by the court, to many of the assertions, if brought to an issue.

"There is certainly nothing in any one, or all of the mixtures combined, which would warrant the claim of this firm to be able to cure 'cancer, rupture, stricture, etc., without pain or knife.'"

This report of the department of agriculture, of itself, is convincing evidence of the falsity of the representation that this company has expended over $50,000 in discovering these medicines. . . .

The failure of the company to offer any evidence whatever of the truth of this representation, despite the opportunities which have been given it to do so, indicates clearly that the company has no such proof to submit. Surely, if it be true that for years this company employed the most skilled chemists and the best physicians of the country to work on these formulas, and expended over $50,000 in cash for this purpose, full and satisfactory evidence of that fact would be available and would be promptly adduced. On the contrary, the company makes no attempt to show that this representation is true, and beyond the simple averment that the "statement as to the work of chemists, etc., is true," seeks to dismiss the matter with the mere statement that "the expenditure may not have been as great as indicated." But even though this fact itself satisfies me of the falsity of this representation, the report of the department of agriculture as to the character of these preparations indicates plainly that the representation is not true. The analyses of these medicines and the formulas therefor disclose that these medicines are commonly and well-known to the medical profession, and that there is nothing whatever about them that is new or unusual. In the light of these analyses, the falsity of this representation is apparent. The suggestion of the inspectors that these medicines were prepared for this company by the chemists of Parke, Davis & Company and E. L. Patch Mfg. Company, well-known manufacturing chemists, under the commonly known practice of these houses of furnishing such formulas free to persons proposing to commence a medicine business, in consideration that the supplies be purchased from said houses, is shown to be undoubtedly correct by the report of the department of agriculture as to the character of the medicines, and especially by the fact that Mr. Hanson is unable to name any other chemist who worked on the formulas other than the chemists of these two houses, which are now manufacturing these medicines. . . .

2. In connection with the representation above noted, the company pretends that its medicines are new, that they are of a character different from anything now known to the medical world, and that they possess superior and wonderful curative properties, and that therefore the medicines of the company will create a large demand, with the result that the stock of the company will earn large profits. The representation that these medicines are new and wonderful permeate the entire literature of the company. The representation that the formulas cost $50,000, is used for the purpose of creating such impression. The impression is also created by such statements as the following:

In the pamphlet styled "Nutriola-Nature's Power—The Fountain of Life," at page 10, references are made to the present system of medicine in a way to lead the reader to believe that this concern has discovered something new, differing from the present methods employed in the practice of medicine, and has discovered something new and different from the present medicines. On page 12 of this same booklet it is pretended that "Nutriola and Nature are the only invincible conquerors of disease."

On page 16 of this same pamphlet, after representing that only temporary relief can be afforded patients by the methods at present known in the practice of medicine, the literature pretends that the relief secured by using Nutriola is something entirely different from the temporary relief which is all that medicine up to the present time has been able to give, and that by the use of Nutriola the system is made "new all over."

On page 18 of this same booklet, referring to a depleted condition of the nervous system, the representation is made that "the old young man will find in Nutriola the only restorer of life, vigor and health. . . . There has been no permanent health for this class until Nutriola was discovered. . . . Nutriola will do for this class when used in connection with our special treatment what nothing else on earth can do."

On page 20 of this same pamphlet, under the heading "Nature and Chemistry," the impression is clearly conveyed that in Nutriola Preparations, a discovery has been made of something new and wonderful, that possesses unusual and powerful curative properties. Especially is this true of the following statement made in that article: "It is no marvel when you understand it; it is simply the result of supplying Nature material that she could use. It costs thousands and thousands of dollars, years of experimentation, testing and treating of disease in whatever form, studying the action of certain combinations of chemical-medicinal properties before the perfect combination known as Nutriola could be ready to go forth in its mission to the world."

On pages 21 and 22 of this same pamphlet, the literature referring to the conditions of motherhood, the idea is clearly sought to be established that Nutriola is a discovery of something new and wonderful. Especially is this true of the statement that "Could we make the future mothers of the world understand that there is *now* no need of bearing sickly children, what a step would be made toward banishing sickness and suffering. How proudly would dawn the morning for future generations."

On page 26 of this same pamphlet the difference between Nutriola and the medicines now known to the medical world is stated in this emphatic language:

"Have you passed the candle era? Do you prefer the electric light or even a good gas-jet or, if no better, an oil lamp, to a tallow dip? Would not think of ignoring modern improvements and going back to the tallow candle, would you? Did you ever stop to think that when candles were the best light, doctors prescribed the same drugs and gave the sick practically the same treatment as to-day? The results were the same, too. Nutriola is as far in advance of all other preparations for the relief and cure of mankind as the electric light is in advance of the tallow candle. Forget it not. *Forget it not.* Some day it will be worth everything to you to remember it."

[We omit the remainder of the quotation to the same effect.]

That the effect of all these references, statements and pretenses is to create the impression in the mind of the reader that the medicines of this company are new and wonderful is positively shown by the fact that the inspector addressed inquiries to a number of investors in this company, wherein this question was asked:

"Please state whether statements in circular matter received by you to the general effect that thousands of dollars had been spent in experimenting to discover and perfect Nutriola remedies, that they were new and never known before, that they were specifics and cures for many stated diseases, and that for these reasons so large a demand for them would be made that the stock of the company would increase many fold in value, and pay large dividends at an early date, was or was not the inducing cause that led to your investing in stock."

The answers received are herewith. They are in the affirmative and show that they invested in this company by reason of their reliance on such impression obtained by them from the literature of the company. . . .

To determine whether there is anything new or wonderful about the medicines and preparations of this company, samples of the medicines in question, and formulas therefor, were obtained and submitted to the department of agriculture. The report of the department of agriculture, giving the results of its investigations, has been quoted above in connection with the representation that $50,000 was expended in the discovering of these formulas. This report shows that there is absolutely nothing about these medicines which in any way warrants the representation that they are new or different from the medicines now known to and commonly used by the medical profession.

The attempt of this company, therefore, to impress proposed purchasers of its stock with the idea that its preparations are new and wonderful is misleading, deceptive and fraudulent. While some of the literature in question is couched in the form of alleged expressions of opinion, but are simply made to prospective purchasers of stock, who are uninformed, and who rely upon the superior knowledge and information of the company as to the quality and character of the medicines, with the intent that such parties shall rely on such statements and be deceived thereby, and be thus influenced to purchase this stock, which they would not otherwise buy.

3. Throughout the literature of this company, used by it to promote the sale of its stock, alluring and unwarranted prospects of enormous profits are held forth, while at the same time the true condition of the company's business is concealed. If the true condition of the business were known, it would have a material effect on the glittering prospects and promises of large returns. In this way the company has induced purchases of its stock, which would not be made if the real facts and conditions were thoroughly understood and truthfully represented.

[Part of the remainder of the report included under this third heading is omitted, not being of medical interest. It quotes the extravagant promises of the company's literature, analyzes the actual financial condition and the possibilities of the business, based on the history of the company and its development thus far, and concludes as follows:]

This literature is sent broadcast over the country, and it is calculated to induce remittances, which would not otherwise be made, except for the very confident manner in which the prospects of great returns are set forth, and especially is this true of the class of people to which such matter appeals. The concealment of the true condition of the company, of the fact that its capital is seriously impaired, of the fact that, although it had been in existence for ten years, it had never earned a profit or paid a dividend, and of the fact that the company is at the present time being operated from the receipts of the sales of stock, and not from the conduct of the company's business—all of which facts have a material effect on the prospects of the company to earn the enormous returns represented—while at the same time promises and prospects of enormous returns are set forth in confident and emphatic language, and the purchaser of stock led to believe that he is offered an exceptional opportunity to become interested in a company that is absolutely safe as an investment, and yet assures tremendous profits, and that each dollar invested by him will earn not less than $220, is unquestionably misleading and deceptive, and manifestly shows that the purpose of the parties promoting this scheme is to mislead and deceive, and thereby effect sales of stock which could not be made if the true condition of the company were disclosed.

While counsel for the company have admitted that these representations are largely exaggerated, they have claimed that the company should not be held responsible therefor, for the reason that they are made as an expression of opinion. I find, however, that these statements are dishonest expressions of opinion, and made with intent to mislead and deceive. Such opinions pretend to be founded on facts which do not exist, and untruthful representations as to the character of the medicines proposed to be sold, and the business of the company; and, furthermore, the true financial condition of the company is concealed, although the facts concealed have a most material bearing on the prospects of the company to earn the returns promised.

4. A further ground on which the company undertakes to assure prospective investors of large returns from the business is pretended to arise from the fact that Mr. Hanson will operate the company, and owing to his exceptional ability in this line of business will make the business of the company extremely profitable. The pretenses carrying the idea that Mr. Hanson possesses unusual and exceptional ability in this line of work are found principally in the advertisements of the company and the pamphlet entitled, "A Guide to Full Pockets." The principal representations made regarding Mr. Hanson in this connection refer to his experience with a business called "Dana's Sarsaparilla." It appears that in that case a profitable sale of the business was effected after Mr. Hanson became charged with the conduct of that company's affairs, and that as the result of such sales the parties interested in the company made a large profit on their investments. The fact, however, that Mr. Hanson has since been unsuccessful in his undertakings and has lost most, if not all, of the money that he had out of Dana's Sarsaparilla business is concealed. This fact would have most material bearing or the representations carrying the idea that Mr. Hanson possesses unusual ability. The representations of this character regarding Mr. Hanson, and made by the company to influence sales of stock, are, therefore, deceptive, in so far as they attempt to show the exceptional ability of the man, because of the concealment of the remainder of his personal history, which greatly modifies it. As a matter of fact, since Hanson sold out Dana's Sarsaparilla he has not been successful, and has been obliged to pass through bankruptcy and be discharged of his debts. Furthermore, he has been operating, in a moderate way at least, the

Nutriola proposition for about eleven years, with the result not only that no profits have been made, but that the capital is impaired from $50,000 to $60,000, and the company is even in debt to him for back salary to a very considerable amount. These representations are, therefore, calculated to mislead and deceive.

Much of the matter formerly used by Hanson to promote the sale of stock and medicines of this company was of an obscene and improper character, and it appears that an indictment is at the present time pending against Hanson at Chicago for the mailing of such matter. It is understood, however, that this objectionable literature is not being used at the present time. This fact is not, however, definitely shown by the inspector's report.

The evidence and circumstances in this case satisfy me that the stock of this company is being sold through the mails by means of pretenses, representations and promises which are false and fraudulent. I therefore recommend that a fraud order be issued against the Nutriola Company at Chicago, Ill.

R. P. GOODWIN,
Assistant Attorney General for the Postoffice Department.

Accordingly a fraud order was issued by Postmaster-General Cortelyou on Nov. 24, 1905.

Attached to the report is the following letter from the Bureau of Chemistry of the Department of Agriculture concerning the analysis of the Nutriola products:

WASHINGTON, D. C., Aug. 10, 1905.

To the Honorable Postmaster General:—In reply to your favor of June 27, in which you requested that an analysis be made of the Nutriola Company's medicines submitted by your department and an expression of opinion given as to the value of the medicines, and also whether the advertising literature contains any false or misleading statements, I have the honor to advise you that the Bureau of Chemistry has made the necessary investigations and I herewith submit its findings.

The Nutriola Company's medicines consist of the following products: "Skin Food," "Liver and Kidney Treatment," "Vaginela," "Laxative Granules" and "Blood and Nerve."

BLOOD AND NERVE.

Blood and Nerve consists of three separate kinds of tablets, which for convenience will be designated in this letter by their colors, namely, Red, White and Yellow.

These remedies presented numerous analytical difficulties, and some of the following results are at best only approximated.

SKIN FOOD.

Skin Food is an ointment-like substance and contains:

	Per cent.
Petrolatum (vaselin) and other unctuous bodies soluble in ether	90.77
Inorganic matter (zinc compounds chiefly)	7.24
Volatile matter at 100 C.	2.00

No real valid complaint can be charged against this compound, except that the term "Skin Food" is rather questionable as to accuracy. It is also an exaggeration to state that this skin food will cure cases that have been given up as hopelessly incurable.

LIVER AND KIDNEY TREATMENT.

This medicine comes in the form of brown tablets and on analysis shows the following products:

	Per cent.
Ash	41.6
Sugar and starch	27.2
Oleoresin (probably buch)	12.2
Moisture, carbon dioxid, nitrogen gases and undetermined organic bodies	18.9

The probable combination of the inorganic component constituents are as follows: Sodium phosphate, potassium nitrate, magnesium sulphate, calcium carbonate, iron sulphate and a small amount of siliceous matter.

This combination contains drugs (oleoresin of buch and potassium nitrate) that have a distinct action on the kidneys. Nothing having a selective action on the liver was detected, but this is not surprising, for there are a good many agents having such an action, yet can not be detected chemically.

I think this medicine will serve a good and useful purpose.

VAGINELA.

This compound consists of greenish-colored, highly aromatic tablets, and an analysis gives the following results:

	Per cent.
Starch	56.4
Inorganic compounds (consisting chiefly of borax and boric acid)	17.0

Salicylic and tannic acids amounts not determined. Aromatic bodies and essential oils amounts not determined.

The agents present in this medicine are recognized as jointly having astringent, antiseptic and soothing qualities. While the literature accompanying the package of medicine contains a few statements that are, in a measure, extravagant, yet no decided criticism could be offered.

LAXATIVE GRANULE.

This medicine comes in the form of red pills and an approximate analysis indicates that it is composed of well-recognized laxatives, such as cascara, jalap, an alkaloidal drug, and possibly rhubarb.

No particular criticism can be offered to this combination, except that it is probably an exaggeration to say that it is a "nourishing laxative," although this may be a possible figurative interpretation of the results obtained.

NUTRIOLA BLOOD AND NERVE—RED.

This is a red tablet and consists of the medicinal mixture known as "Blaud's mass," with such associated substances as are frequently used in the making of pill masses. There is no doubt but this is a valuable medicine.

NUTRIOLA BLOOD AND NERVE—WHITE.

This remedy consists of small, white, bitter tablets, and an approximate analysis shows it to contain strychnin and possibly damiana. This is a well-recognized combination of valuable medicinal agents and is, therefore, a medicine of good quality.

NUTRIOLA BLOOD AND NERVE—YELLOW.

This medicine comes in the form of yellowish tablets, which do not possess any taste characteristic of a commonly used medicine, excepting ginger, and ginger is the only product I have been able to definitely make out as being present. I am, therefore, unable to express any opinion as to the value of this medicine, except so far as it resides in the ginger. Ginger is recognized as having a stimulating effect when introduced into the alimentary canal.

I have also read over with care Exhibit C, entitled "A Guide to Full Pockets," and must confess that so far as the medicinal and pharmaceutical sides are concerned there does not seem to be any decidedly exaggerated statements. On page 8 will be found a statement which conveys the idea that Nutriola is not composed of drugs. This is certainly not correct. On page 9 are a number of questionable statements, namely, that Nutriola is a "tissue-former" and "nerve-builder" and the "very essence of life." The statement found on page 10 of "Full Pockets" near the bottom leads to the belief that Vaginela is absolutely different from other remedies of this character. This, however, is not correct, because the constituents found are frequently employed by practicing physicians for diseases similar to those for which Vaginela is recommended by the Nutriola Company.

I would call your attention, however, to several advertisements found in the packages containing the medicines themselves. . . . I have placed a number of lead-pencil marks opposite many unwarranted and exaggerated statements. Before forming a decided opinion on these statements it should be borne in mind that they are, in a measure, mitigated by an introductory clause, namely, "Temporary relief and permanent cure," near the bottom of page 2 of exhibit No. "M."

According to exhibit No. "N," near the middle of the page, this firm claims to be able to cure by the use of Nutriola and different forms of electricity "cancers, tumors, rupture, stricture, etc., without pain or knife."

It might be well also to make a remark relative to the impression made by the literature concerning the large returns for investments. It is well known that many proprietary remedies have netted the owners very handsome profits. It is also only fair to say, judging from the success of ordinary business ventures along this line, that this firm would find it difficult to pay a profit of $220 on every dollar invested.

This letter is signed by the acting secretary.

Marriages

BARTON H. POTTS, M.D., to Miss Florence L. Borie, both of Philadelphia, April 18.

WILLIAM J. ABBOTT, M.D., to Miss Mary Crozier, both of Cleveland, Ohio, April 12.

FRANK E. HICKLIN, M.D., La Salle, Ill., to Miss Mary Fickle of Sandwich, Ill., April 11.

HAROLD BARCLAY, M.D., to Miss Hellen Fuller Potter, both of New York City, April 14.

JAMES R. BISHOP, M.D., Nanticoke, Md., to Miss Elizabeth Pyle, at Baltimore, April 14.

SAMUEL CLAGGETT, M.D., Petersville, Md., to Miss Jeannette B. Chew, at Baltimore, April 18.

DELL E. GRAHAM, M.D., Bradgate, Iowa, to Miss Manta Shellenberger of Humboldt, Iowa.

ALBERT CHARLES CLAUSER, M.D., to Miss Mary Hawkins Sims, both of Delphi, Ind., April 19.

OLIVER B. VAN FASSEN, M.D., Humphreys, Mo., to Miss Zenith Moyers of St. Louis, April 11.

HENRY C. WRIGHT, M.D., Nashville, Tenn., to Miss Julia Morrell of Los Angeles, Cal., April 10.

GUSTAF RICHARD EGELAND, M.D., to Miss Lydia Alvira Anderson, both of Ephraim, Wis., April 18.

ST. GEORGE T. GRINNAN, M.D., Richmond, Va., to Miss Susan Fitzhugh Dabney, at Charlottesville, Va., April 18.

CHARLES J. MARQUETTE, M.D., Nova, Ohio, to Miss Evelyn Kelsey of Huntington, Ohio, in Cleveland, February 10.

Deaths

Milton Curtis Wedgewood, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1859; assistant surgeon of the Eleventh Maine Volunteer Infantry during the Civil War; president of the Maine Medical Association, and in 1897 president of the Maine Academy of Medicine and Science; president of the Adroscoggin County Medical Association; one of the organizers of the Central Maine General Hospital, Lewiston; a member of the International Health Association; a member of the executive council of Maine under two administrations, and once a member of the State Board of Health, died at his home in Lewiston, April 9, from brain disease, after a long illness, aged 73.

J. Coplin Stinson, M.D. University of Trinity College, Toronto, 1893, Fellow Trinity Medical College, 1893; member of the College of Physicians and Surgeons Toronto, 1893; first silver medallist Trinity Medical College; a member of the American Medical Association, Medical Society of the State of California; San Francisco County Medical Society and San Francisco Clinical Society; physician to the British Benevolent Association, San Francisco; surgeon to the Pacific Sanitarium; a member of the Board of Health of San Francisco, is reported to have been killed by falling bricks at the California Hotel, San Francisco, April 18.

George W. Beggs, M.D. Rush Medical College, Chicago, 1862; a pioneer physician of Sioux City, Iowa; surgeon of the One Hundred and Sixth Illinois Volunteer Infantry during the Civil War; a member of the local and state medical societies and of the Association of Military Surgeons of the United States; surgeon general of the Union Veteran Army of the United States in 1885; for many years local surgeon for the Illinois Central and Chicago, Milwaukee & St. Paul railroads, and president of the Sioux City College of Medicine for ten years, died at his home in Sioux City, April 10, from kidney disease, after an illness of two years, aged 69.

Charles Ferdinand Taggart, M.D. Medical Department of Washington University, St. Louis, 1884, of Los Angeles, a member of the American Medical Association; Medical Society of the State of California; Southern California Medical Society; Los Angeles County Medical Society; National Association of Railway Surgeons and Pacific Coast Association of Railway Surgeons; chief surgeon of the San Pedro, Los Angeles and Salt Lake Railroad, died in San Francisco, April 18, from a gunshot wound caused by his own revolver which fell from his pocket and was discharged.

Eugene Beauharnais Harrison, M.D. Jefferson Medical College, Philadelphia, 1856; a member of the American Medical Association, Ohio State Medical Society, Henry County Medical Society, and the Society of the Army of the Tennessee; major and surgeon of the Sixty-eighth Ohio Volunteer Infantry throughout the Civil War, died at his home in Napoleon, Ohio, April 15, nineteen days after a suprapubic prostatectomy for prostatic hypertrophy and vesical calculus, aged 74.

Nicholas D. Richardson, M.D. Vanderbilt University, Medical Department, Nashville, 1899; acting assistant surgeon, United States Public Health and Marine-Hospital Service; a member of the Association of Military Surgeons of the United States; quarantine inspector at San Francisco; formerly of Athens, Ala., died from tuberculosis at his home in San Francisco, April 9, after a long illness, aged 34.

G. Ray Hoff, M.D. Bellevue Hospital Medical College, New York City, 1893; some-time professor of materia medica in Denver University and assistant professor in Gross Medical College; a member of the state and county societies of New York, of the Denver and Denver County Medical Society, and the Colorado State Medical Society, died at his home in Utica, N. Y., April 14, after a prolonged illnes , aged 38.

Elias De Spelder, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1882; a member of the American Medical Association, of the Michigan State Medical Society, and second vice-president of the Ottawa County Medical Society, died at his home in Zeeland, Mich., April 11, from meningitis, after an illness of one week, aged 49. The society attended the funeral in a body.

Edwin A. Kelly, M.D. Medical College of Ohio, Cincinnati, 1878; assistant superintendent of the Agnew State Hospital for the Insane, Agnews, Cal.; in 1882 assistant superintendent of the Columbus (Ohio) State Hospital, and later assistant superintendent of the Athens (Ohio) State Hospital, was crushed to death in the collapse of the building due to the earthquake, April 18, aged 55.

Matthew T. Gaffney, M.D. College of Physicians and Surgeons, Baltimore, 1897; for several years district physician of Newark, N. J.; a member of the visiting staff of St. Michael's Hospital, and surgeon for the North Jersey Street Railway Company, died at his home in Newark, April 16, from kidney disease, after an illness of two weeks, aged 36.

Robert C. Davis, M.D. New York University, New York City, 1880; for many years inspector in the New York health department; a member of the New York County Medical Society and of the New York Academy of Medicine, died April 13, in Roosevelt Hospital, New York City, from pneumonia, after an illness of five days, aged 47.

Richard D. Webb, M.D. Starling Medical College, Columbus, Ohio, 1865; a practitioner of Nortonville, Kan., for more than a quarter of a century; assistant surgeon of the Seventy-eighth Ohio Volunteer Infantry during the Civil War, died in a hospital at Topeka, April 6, two days after an operation for cholelithiasis, aged 67.

Louis Mackall, M.D. University of Maryland, School of Medicine, Baltimore, 1851; a member of the American Medical Association; for many years professor of physiology and clinical medicine at the University of Georgetown, Medical Department, Washington, D. C., died at his home in Washington, April 19, aged 75.

Joseph K. Milbourne, M.D. State University of Iowa, College of Medicine, Iowa City, 1881, of Clinton, Iowa, past president of the Iowa State Medical Society and president of the Clinton County Medical Society, died at Agatha Hospital, Clinton, April 13, from peritonitis, five days after an operation for appendicitis, aged 54.

William J. Rhymes, M.D. Tulane University of Louisiana, Medical Department, New Orleans, 1899; formerly of St. Martinville, La.; superintendent of the Maricopa County Hospital, Phoenix, Ariz., died at his home in that city, February 1, from pneumonia, after an illness of ten days, aged 33.

Theophilus R. Carter, M.D. College of Physicians and Surgeons in the City of New York, 1892, a member of the Westchester County Medical Society, died at his home in Mount Vernon, N. Y., from progressive muscular atrophy, after an illness of about two years, January 22, aged 42.

Emma D. Cook, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1892; a member of the Wayne County and Michigan state medical societies; state examiner for the Ladies of the Maccabees, died at her home in Detroit, April 14, from anemia, aged 58.

Hugh Alexander McEachren, M.D. Detroit College of Medicine, 1892, a member of the American Medical Association and a prominent specialist in diseases of the nose, throat and

lungs, died April 8, at his home in Detroit, from tuberculosis, after an illness of several years, aged 36.

Richard Jones Price, M.D. Medical College of Virginia, Richmond, 1898; acting assistant surgeon, United States Army, and on duty in the Philippine Islands; formerly of Wilmington, N. C., died in Asheville, N. C., April 4, from tuberculosis, after a prolonged illness, aged 35.

John Bruce MacCallum, M.D. Johns Hopkins University, Medical Department, Baltimore, 1900, assistant professor of physiology in the University of California, died at his home in Berkeley, Cal., from nephritis, after an illness of more than three years, aged 30.

Joseph W. Harris, M.D. Miami Medical College, Cincinnati, 1874, a veteran of the Civil War, and for eighteen years a resident of Los Angeles, Cal., died at his home in that city, April 12, from overwork, after an illness of two years, aged 65.

John Forshee Halsted, M.D. Eclectic Medical College of Philadelphia, 1857; member of the College of Physicians and Surgeons of Ontario, 1869, formerly of Berlin and Grand Valley, Ont., died at Winnipeg, Man., March 3, aged 82.

Robert Corbin Wintermute, M.D. Eclectic Medical Institute, Cincinnati, 1881, and professor of obstetrics, gynecology and pediatrics in his alma mater, died from cerebral hemorrhage, at his home in Norwood, Cincinnati, April 15, aged 44.

John H. Tanner, M.D. University of Buffalo, Medical Department, 1863, formerly a practitioner of Spencer, N. Y., died at his home in Harford, N. Y., March 12, from the effects of a self-inflicted gunshot wound of the head, aged 70.

Alexander J. Bowser, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1890, died at his home in New Baltimore, Pa., April 11, from heart disease, after an illness of several months, aged 43.

James W. Gardner, M.D. Pennsylvania Medical College, Philadelphia, 1867; one of the oldest and best-known practitioners of East Liverpool, Ohio, died suddenly at his home in that city, April 13, aged 79.

Stephen E. Wentworth, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1868, one of the oldest practitioners of Auburn, Maine, died suddenly in that city from heart disease, April 10, aged 69.

James J. Cole, M.D. Miami Medical College, Cincinnati, 1870; a practitioner of Indianapolis for nearly thirty years, died at his home in that city April 10, from valvular heart disease, after a long illness, aged 62.

Leonard Keehn, M.D. Medical Department of Washington University, St. Louis, 1899, of St. Louis, Mo., died in Los Angeles, Cal., from tubercular meningitis, April 9, after a prolonged illness, aged 36.

Cary K. Parker, M.D. Tulane University of Louisiana, Medical Department, New Orleans, 1895, formerly of Pollock, La., died in Bonita, La., April 10, after a prolonged illness, from tuberculosis, aged 34.

John P. Waste, M.D. Charity Hospital Medical College, Cleveland, 1865, a charter member of the Southern Minnesota Medical Association, died at his home in Plainview, Minn., April 17, aged 69.

Henry L. Stone, M.D. University of Maryland School of Medicine, Baltimore, 1868, a veteran of the Civil War, died at his home in Montgomery, Ala., January 12, after a long illness, aged 59.

Edward F. Perkins, M.D. Medical Department of the University of Missouri, St. Louis, 1855, state senator in 1878, died at his home in Linneus, Mo., April 4, after a prolonged illness, aged 72.

Edward R. Wallizer, M.D. Baltimore Medical College, 1884, of Des Moines, Iowa, a veteran of the Civil War, died in the Clarinda State Hospital, April 4, after an illness of two years, aged 60.

Alexander Fitzpatrick, M.D., a Confederate veteran, and for several terms representative from Nelson County in the Virginia legislature, died at his home in Rockfish, April 14, aged 79.

Charles V. Holsclaw, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1886, formerly of Lovilia, Iowa, died suddenly at his home in Merriman, Neb., recently.

W. C. Tinsley, M.D. Georgia University, Medical Department, Augusta, 1857, of Flint, Ga., died suddenly at Americus, Ga., April 12, from cerebral hemorrhage, aged 72.

Joseph G. Weaver, M.D. Howard University, Medical Department, Washington, 1899, died at his home in Newark, N. J., after a protracted illness, March 28, aged 41.

Charles A. Delander, M.D. Iowa College of Physicians and Surgeons, Des Moines, 1902, died at his home in Des Moines, April 12, from rheumatic endocarditis, aged 36.

Paul Pritchard, M.D. Medical College of the State of South Carolina, Charleston, 1841, a Confederate veteran, died at his home in Pritchardville, S. C., April 4, aged 86.

H. I. Liesch, M.D. Western Reserve University, Medical Department, Cleveland, Ohio, 1881, died suddenly from heart disease, in his room in Nodaway, Mo., April 10.

Robert Pearson, M.D. University of the City of New York, Medical Department, 1860, a veteran of the Civil War, died at his home in Morganton, N. C., January 26.

Anna C. Rees, M.D. Woman's Medical College of the New York Infirmary, New York City, 1898, died at her home in Union Hill, N. J., Oct. 25, 1905, aged 29.

J. A. Mullen, M.D. Jefferson Medical College, Philadelphia, 1893, died suddenly in Huntington, W. Va., from heart disease, January 23, aged about 45.

Frank S. Turner, M.D. University Medical College of Kansas City, Mo., 1894, died at his home in Monroe City, Mo., from peritonitis, March 12, aged 37.

Frederick A. Smart, M.D. Albany (N. Y.) Medical College, 1899, died at his home in Cobleskill, N. Y., April 14, from cerebral hemorrhage, aged 35.

George R. Weston, M.D. National Medical University of Illinois, Chicago, 1891, died at his home in San Antonio, Texas, January 30, aged 51.

John Skivington, M.D. Medical College of Ohio, Medical Department, Cincinnati, 1857, died at his home in Morganza, Pa., January 18, aged 76.

John S. Neville, M.D. (Examination, Ohio), died at his home in Roundhead, Ohio, March 2, after a short illness, from senile debility, aged 75.

D. P. Stradley, M.D. (Examination, Colorado), formerly of Longmont, Colo., died in Albuquerque, N. M., from tuberculosis, January 4.

J. E. Coyle, M.D. University of Tennessee, Medical Department, Nashville, 1892, is reported to have died recently in Wewaka, I. T.

William Osborne, M.D. Bennett College of Eclectic Medicine and Surgery, Chicago, 1882, died at his home in Chicago, April 19.

Michael A. Glennan, M.D. Rush Medical College, Chicago, 1878, died at his home in Ludlow, Ill., from kidney disease, April 11.

Ira C. Sawyer, M.D. Dartmouth Medical School, Hanover, N. H., 1864, died at his home in Springvale, Maine, April 13, aged 66.

Samuel Sprecher, M.D. Illinois Medical College, Chicago, 1901, died recently and was buried in Springfield, Ohio, January 14.

George Smith Gould, M.D. Rush Medical College, Chicago, 1896, died suddenly in Cleveland, February 10.

Daniel L. Dakin, M.D. Rush Medical College, Chicago, 1870, died suddenly at his home in Detroit, April 2.

W. T. Campbell, M.D. Marion-Sims-Beaumont College of Medicine, died recently in St. Louis, aged 80.

Book Notice

PRACTICAL SANITARY SCIENCE. A Handbook for the Public Health Laboratory. By D. Sommerville, B.A., M.D. Cloth. Pp. 310. Price, $3.00. New York: William Wood & Co.

This book is described in its subtitle as "a handbook for the public health laboratory." As such it does not seem adapted to fill any long-felt want of American workers. Considerable space is devoted to elementary physical and chemical data. In the chapter on air analysis, for example, we are told that there are three thermometric scales in use and what the respective freezing points and boiling points are. It has been thought necessary to take up space with pictures of a hot-air oven (p. 12) and a chemical balance (p. 15). In general the methods seem somewhat perfunctorily described; this is particularly true on the bacteriologic side. Loose statements are noticed here and there. On p. 150, in the section on pathogenic organisms in milk, it is asserted that "unless the disease (tuberculosis) affects the udder, no bacilli are found in the milk."

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

QUININ TREATMENT OF PNEUMONIA.

BALTIMORE, April 17, 1906.

To the Editor:—Since reading Dr. Galbraith's article on this subject, I have had occasion to use this treatment in half a dozen cases, and it gives charming results when Dr. Galbraith's rules regarding administration are carried out. The average duration of the disease is about three days. Under the old form of treatment I had treated just previously about the same number of cases with the result that it was from three to six weeks before the patients could get out of bed. Now I would rather have a case of pneumonia with my quinin and iron than a case of malarial fever, for I know that I have a specific. NORMAN H. D. COX, M.D.

CONTRACT PRACTICE.

ALEXANDRIA, LA., April 9, 1906.

To the Editor:—At a recent meeting, the Rapides Parish (La.) Medical Society adopted the following resolutions:

We, the members of the Rapides Parish Medical Society in special session convened, after due deliberation, have reached the conclusion that a fee of less than $5 is not commensurate with the services rendered in making an examination for life insurance companies. Realizing the important relation existing between the medical examiner and the life insurance companies, we believe that a fee of not less than $5 for any medical examination should be charged. Therefore be it

Resolved, That we herewith pledge ourselves not to make an examination for a fee less than $5 in future. Be it further

Resolved, That a fee of not less than $3 be charged for fraternal and benevolent orders. It is further

Resolved, That it shall be deemed a breach of professional dignity on the part of any physician to make an examination for fees less than above mentioned.

We memorialize the Louisiana State Medical Society to take cognizance of this matter, and urge all constituent societies to indorse this action.

G. M. G. STAFFORD, M.D., Secretary. J. A. WHITE, M.D., President.

ORANGE, N. J., April 11, 1906.

To the Editor:—At the last annual meeting of the Essex County (N. J.) Medical Society, held April 3, 1906, a resolution was passed condemning lodge or contract practice, and making any member engaging in such practice subject to expulsion from the society.

At the last monthly meeting of the Orange Practitioners' Society of Orange, N. J., a committee was appointed to secure the signatures of all the physicians in the Oranges to an agreement not to engage in lodge or contract practice. At present some 3,000 people in the Oranges are receiving medical treatment for less than nine (9) cents a month.. EDGAR C. SEIBERT.

THE AUTOMOBILE FOR THE PHYSICIAN'S USE.

DR. JAMES E. TAYLOR, Ovid, Mich., writes: "I enjoyed very much the various opinions and experiences of medical men in the use of the automobile. I am convinced that they are not yet practical for use in this locality. I am considering the purchase of an automobile to use in my practice, and would request, if practical, that THE JOURNAL gather and publish as soon as can be done the experiences of medical men in the use of this machine in practice. I believe many physicians are interested in this."

DRS. A. M. and C. R. CLARK, Youngstown, Ohio, say: "We agree that tires are the greatest source of trouble, but we have been afraid to try solid tires yet. This experience meeting of yours is fine, and should open the eyes of some manufacturers."

DR. H. H. SHERWOOD, Bowen, Ill., writes: "I have enjoyed the articles and think that they will be of great benefit to some of us who are thinking of investing."

DR. A. J. HOBSON, Hampton, Iowa, says: "I have read with much interest the articles on automobiles. I have been using an automobile in my practice for the last three years, and must say I have not met with as good luck as most of these doctors report. I have had two machines, and plenty of trouble with each. I may have been unfortunate in selecting my car. Thank you for your favor in helping us out on this hard problem."

DR. D. M. REYNOLDS, Clayton, Ind., writes: "I read with much interest the several letters from physicians in regard to use of the automobile. I think such timely discussion of business topics will make THE JOURNAL more interesting and valuable."

DR. OLIVER C. SMITH, Hartford, Conn., reports: "Five years ago I purchased an electric vehicle, weighing 2,000 pounds, with a speed on smooth, level roads, of twelve miles per hour. During the past five years, the negative and positive plates have each been replaced at a cost of $280. During the third year, the tire expense became excessive, and I replaced the inflated tires with hard, rubber tires. With this exception there has been no renewal or change of parts. The cost for electricity, with daily use of vehicle, averages from $10 to $12 per month. The most serious bill of expense, aside from tires, is the minor repairs to pinions, gears, bushings, fingers and controller. My carriage has been continually kept at a garage, which furnishes day and night service. It is my opinion that a modern electric vehicle is the most satisfactory equipment for a physician practicing in a city. It can not supplant the horse and carriage through heavy roads, it can not compete with the gasoline car in country use or in long runs, but is ideal for short trips over smooth, macadamized or asphalt pavements."

TOY PISTOLS AND OTHER SIMILAR DEVICES.

CLAREMONT, N. H., April 14, 1906.

To the Editor:—I thank you for the information given regarding toy pistols, etc. [THE JOURNAL A. M. A., April 14, p. 1132]. Inasmuch as this question is rather indefinite and the authorities will want to know more definitely what devices are safe and what are dangerous, could you not give me a little more information as to some of the devices usually considered dangerous, and some of the explosives which should be avoided? It is generally assumed that the canes which explode dynamite or powder, and the earthenware or iron balls covered with an explosive coating, which is exploded by knocking the balls together when held in the hands, and various similar devices, are all dangerous and should be avoided. The different forms of powder are, I believe, some safe and some dangerous, and I would be pleased to have any suggestions in this line which you can make. THOMAS W. FRY.

ANSWER.—It may be stated in a general way that any explosive with power enough to lacerate the skin is dangerous as to tetanus and infection, and that any explosive so prepared that it leaves ignited paper or other materials about is dangerous to property. The idea that tetanus results from any particular sort of powder or other explosive is incorrect; it is the wound, and not the nature of its cause that is important. The danger of the Fourth (as regards loss of life) will disappear if the three chief offenders are removed: these are the blank cartridge, the cannon cracker, and the toy cannon. The exploding canes mentioned for the most part use blank cartridges, and are dangerous. We doubt if the cracking balls mentioned cause much trouble.

State Boards of Registration

COMING EXAMINATIONS.

TENNESSEE State Board of Medical Examiners, Memphis, Nashville and Knoxville, May 2. Secretary, T. J. Happel, Trenton.

ILLINOIS State Board of Health, Metropolitan Block, East St. Louis, May 2-4. Secretary, J. A. Egan, Springfield.

LOUISIANA State Board of Medical Examiners, New Orleans, May 3-4. Secretary, F. A. Larue, New Orleans.

BOSTON Board of Registration in Medicine, State House, Boston, May 8-9. Secretary, E. B. Harvey, Boston.

OREGON State Board of Medical Examiners, Portland, May 10-12. Secretary, Byron E. Miller, Portland.

KENTUCKY State Board of Health, Galt House, Louisville, begins May 15. Secretary, J. N. McCormack, Bowling Green.

INDIANA Board of Medical Registration and Examination, Indianapolis, May 22-24. Secretary, W. T. Gott, Indianapolis.

NEW YORK State Boards of Medical Examiners, Albany, May 22-25. Secretary, Charles F. Wheelock, Albany.

ILLINOIS State Board of Health, Coliseum Annex, Chicago, May 23-25. Secretary, J. A. Egan, Springfield.

NEBRASKA State Board of Health, State House, Lincoln, May 29-30. Secretary, George H. Brash, Beatrice.

Approve Reciprocity.—The County Medical Society of Barbour, Randolph and Tucker counties, W. Va., at its last meeting adopted the following resolution:

Resolved: That we heartily approve of the work being done by the American Confederation of Reciprocating, Examining and Licensing Medical Boards. Especially do we approve of that part of the work known as "Qualification No. 2," the object of which is to give reciprocity to the older practitioners.

Indian Territory April Report.—Dr. J. B. Smith, secretary of the Central District Medical Examining Board, reports the written examination held at South McAlester, April 2-3, 1906. The number of subjects examined in was 12; total number of questions asked, 130; percentage required to pass, 75. The total number of candidates examined was 12, of whom 10 were undergraduates; 6 passed and 6 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED.		
College of P. and S., Indiana	(1906)	78.5
Ft. Worth University	(1906)	83
Undergraduates	75, 76.2, 77, 83	
FAILED.		
Undergraduates	61.5, 62, 65, 68, 70, 72	

Iowa March Report.—Dr. J. F. Kennedy, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, March 21-22, 1906. The number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 11, of whom 10 passed and 1 failed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
American Med. Miss. Coll.	(1899) 81;	(1905) 86
College of P. and S., Baltimore		(1903) 87
College of P. and S., Chicago	(1899) 75;	(1901) 75
Hahnemann Med. Coll., Chicago		(1887) 78
Hering Med. Coll., Chicago		(1904) 75
Northwestern University		(1900) 85
Queen's University, Ontario		(1905) 92
Rush Med. Coll.		(1903) 89
FAILED.		
Meharry Med. Coll., Nashville		(1902) 73

Maine March Report.—Dr. William J. Maybury, secretary of the Maine Board of Registration of Medicine, reports the oral and written examination held at Portland, March 13, 1906. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 15, of whom 13 passed and 2 failed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
Harvard University	(1901) 80.4,	93.5
College of P. and S., Boston	(1904)	84.6
Woman's Med. Coll., Pennsylvania	(1903)	85.9
Tufts Coll. Med. School	(1905) 85, 85.3,	86.7
Bellevue Hosp. Med. Coll.	(1905)	86.3
Baltimore Med. Coll.	(1905)	75.2
Medico-Chirurgical Coll., Pennsylvania	(1903)	84.5
Baltimore University	(1901)	81.3
College of P. and S., New York	(1890)	84
University of Michigan	(1889)	84.3
FAILED.		
College of P. and S., Boston	(1905)	57.2
Harvard University	(1904)	74.4

Montana April Report.—Dr. W. C. Riddell, secretary of the Board of Medical Examiners of Montana, reports the written examination held at Helena, April 3-4, 1906. The number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 27, of whom 14 passed and 13 failed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
University of Michigan	(1904)	84.8
College of P. and S., Baltimore	(1904)	75.6
University of Pennsylvania	(1894)	75.4
St. Louis University	(1905)	75.9
College of P. and S., Chicago	(1904)	90.2
Rush Med. Coll.	(1900) 79.8;	(1906) 76.5
Johns Hopkins Medical School	(1901)	75.1
College of P. and S., New York	(1893)	80.3
Maryland Med. Coll.	(1904)	78
George Washington University	(1905)	79.8
Medical College of Ohio	(1904)	83
American Med. Miss. Coll.	(1905)	78.4
Illinois Med. Coll.	(1898)	75.9
FAILED.		
Alexander University, Helsingsfors, Finland	(1896)*	
Wooster University	(1891)	54.9
Beaumont Hosp. Med. Coll	(1901)	65.4
College of P. and S., Chicago	(1902)	70.1
Missouri Med. Coll.,	(1884)	66.3
Medical College of Ohio	(1899)	56.9
Barnes Med. Coll.	(1898)	62.1
Creighton Med. Coll.	(1900)	55.1
Laval University, Quebec	(1903)	40.1
Jefferson Med. Coll.	(1897)	69.8
University of the City of New York	(1893)	55.3
University of Vermont	(1895)	55.9
Marion Sims College of Medicine	(1895)	51.2

*Did not complete examination on account of sickness.

North Dakota April Report.—Dr. H. M. Wheeler, secretary of the North Dakota State Board of Medical Examiners, reports the written examination held at Grand Forks, April 3-5, 1906. The number of subjects examined in was 14; percentage required to pass, 75. The total number of candidates examined was 17, of whom 15 passed and 2 failed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
Sioux City Coll. of Med.	(1904)	76
University of Illinois	(1901)	81
Queen's University, Ontario	(1896)	88
Hamline University	(1900) 78;	(1905) 88
Saginaw Valley Medical College	(1901)	80
University of Minnesota	(1903)	81, 90
University of Toronto	(1905)	78
Laval University, Quebec		*81
Detroit Med. Coll.	(1905)	75
Christiania University, Norway	(1902)	76
Hahnemann Med. Coll., Chicago	(1894)	81
Washington Univ., St. Louis	(1904)	75
College of P. and S., Chicago	(1905)	**82
FAILED.		
Hamline University	(1901)	
Hering Med. Coll., Chicago	(1902)	

*Year of graduation not given.
**Licensed by reciprocity with Illinois.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending April 21, 1906:

Perley, Harry O., deputy surgeon general, granted leave of absence for two months on relief from duty at West Point, N. Y.

Lynch, Charles, surgeon, detailed member of the General Staff Corps.

Ruffner, E. L., asst.-surgeon, granted thirty days' leave about June 1, with permission to apply for an extension of two months.

Hanner, John W., asst.-surgeon, leave of absence extended ten days.

Tukey, William H., contract surgeon, returned to Boise Barracks, Idaho, from leave of absence.

Enders, William J., contract surgeon, returned to Fort Morgan, Ala., from leave of absence.

Brown, Wilmont E., contract surgeon, left Boise Barracks, Idaho, for duty at Fort Walla Walla, Wash.

Koyle, Fred T., contract surgeon, left Fort Bliss, Texas, on leave of absence for ten days.

Kuhn, Charles F., contract surgeon, returned from Fort William H. Seward, Alaska, to Fort Lawton, Wash., his proper station.

Long, Charles J., dental surgeon, arrived at Fort Missoula, Mont., for duty, from Fort William Henry Harrison, Mont.

Long, Stephen M., contract surgeon, ordered to Philippine service, and sailed on the *Sheridan* from San Francisco, April 16.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending April 21, 1906:

Langhorne, C. D., surgeon, ordered to Washington, D. C., for duty in attendance on course of instruction at the Naval Medical School.

Woods, E. L., asst.-surgeon, ordered to the Naval Academy.

Nelson, H. T., Jr., asst.-surgeon, detached from the Naval Academy and resignation accepted to take effect April 14, 1906.

Pease, T. N., asst.-surgeon, detached from the *Columbia* and ordered home to wait orders.

Brooks, F. H., asst.-surgeon, ordered to the *Columbia*.

Schaller, W. F., asst.-surgeon, ordered to the Naval Hospital, Mare Island, California.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending April 18, 1906:

Guiteras, G. M., surgeon, granted leave of absence for one day, April 15, 1906.

Young, G. B., P. A. surgeon, directed to proceed to Saginaw and Bay City, Mich., for special temporary duty, on completion of which to rejoin station.

Young, G. B., P. A. surgeon, designated to represent the service at the Council on Medical Education of the American Medical Association, Chicago, Ill., May 12, 1906.

King, W. W., P. A. surgeon, five days leave of absence revoked, and directed to rejoin his station in Washington, D. C.

Amesse, J. W., P. A. surgeon, relieved from special temporary duty at New Orleans, La., and directed to rejoin his station at Ellis Island, N. Y.

Rucker, W. C., asst.-surgeon, relieved from special temporary duty at New Orleans, and directed to proceed to Vineyard Haven, Mass., and assume temporary command of the Service.

Ward, W. K., asst.-surgeon, granted leave of absence for five days, from April 4, on account of sickness.

Ebersole, R. E., asst.-surgeon, granted leave of absence for four days, from April 11, under the provisions of Paragraph 191 of the Regulations.

Smith, F. C., asst.-surgeon, relieved from special temporary duty at New Orleans, La., and directed to rejoin his station at Detroit, Mich.

Smith, F. C., asst.-surgeon, granted fourteen days' leave of absence en route from New Orleans to Detroit.

Jackson, J. M., acting asst.-surgeon, granted leave of absence for five days, from April 17.

Keatley, H. W., acting asst.-surgeon, granted leave of absence for three days, from April 16, 1906, under the provisions of Paragraph 191 of the Regulations.

Gibson, F. L., pharmacist, relieved from duty at San Francisco, Cal., and directed to proceed to Honolulu, T. H., reporting to Dr. W. R. Brinckerhoff, Director of the Leprosy Investigation Station, for duty at Molokai, T. H.

Bierman, C. H., pharmacist, relieved from duty at Tampa Bay Quarantine Station, and directed to proceed to Portland, Me., reporting to the medical officer in command for duty and assignment to quarters.

Keen, W. H., pharmacist, directed to proceed to Tampa Bay Quarantine Station for duty and assignment to quarters.

APPOINTMENT.

Walter H. Keen was reinstated as Pharmacist of the third class on April 11, 1906.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended April 20, 1906:

SMALLPOX—UNITED STATES.

California: San Francisco: March 31-April 7, 41 cases, 1 death.
District of Columbia: Washington, April 7-14, 1 case.
Louisiana: Shreveport, April 7-14, 1 case.
Missouri: St. Louis, April 7-14, 6 cases; West Plains, March 8, 1 case.
Montana: Beaverhead County, March 1-31, 2 cases; Park County, 1 case.
New Jersey: Rutherford, April 7, 1 case.
New York: New York, April 7-14, 5 cases.
North Carolina: Greensboro, April 7-14, 2 cases.
Pennsylvania: Pittsburg, March 31-April 7, 2 cases.
Texas: Houston, April 7-14, 1 case.
Vermont: Richford, April 12, 2 cases.
Wisconsin: Appleton, April 7-14, 5 cases.

SMALLPOX—FOREIGN.

Brazil: Rio de Janeiro, Feb. 18-March 18, 2 cases, 3 deaths.
China: Canton, March 3, present; Hongkong, Feb. 24-March 3, 11 cases, 5 deaths.
France: Paris, March 24-31, 6 cases, 1 death.
Germany: Bremen, March 25-April 1, 2 cases.
Great Britain: Bristol, March 25-31, 2 cases; Glasgow, March 30-April 6, 1 case.
Greece: Athens, March 15-22, 2 deaths.
India: Bombay, March 13-20, 18 deaths; Calcutta, March 3-10, 102 deaths; Karachi, March 11-18, 33 cases, 17 deaths; Madras, March 10-16, 39 deaths; Rangoon, March 3-10, 101 deaths.
Italy: General, March 15-22, 35 cases.
Mexico: Tuxpam, March 27-April 3, 1 death.
Russia: Odessa, March 25-31, 10 cases, 2 deaths; St. Petersburg, March 10-24, 12 cases, 2 deaths.
Spain: Barcelona, March 21-31, 6 deaths.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, Feb. 18-March 18, 10 cases, 6 deaths.
Honduras: Choloma, April 6, 6 cases.
Nicaragua: Managua: March 10-17, 1 death.

PLAGUE—UNITED STATES.

Delaware: Reedy Island Quarantine, April 6-11, 2 cases 1 death (on Steamship *Burrisfield*, from Bombay).

PLAGUE—INSULAR.

Hawaii: Honolulu, April 14-15, 2 deaths.

PLAGUE—FOREIGN.

Brazil: Rio de Janeiro, Feb. 18-March 18, 10 cases, 6 deaths.
China: Hong Kong, Feb. 24-March 3, 8 cases, 7 deaths.
Egypt: General, March 24-29, 7 cases, 5 deaths.
India: General: March 3-10, 2,623 deaths; Bombay, March 13-20, 572 cases, 572 deaths; Calcutta, March 3-10, 83 deaths; Karachi, March 11-19, 52 cases, 44 deaths; Rangoon, March 3-10, 48 deaths.

CHOLERA.

India: Bombay, March 13-20, 2 deaths; Calcutta, March 3-10, 44 deaths.

Society Proceedings

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Boston, June 5-8.

Nebraska State Medical Association, Lincoln, May 1-3.
New Mexico Medical Association, Albuquerque, May 2.
American Therapeutic Society, New York City, May 3-5.
Oklahoma Medical Association, Oklahoma City, May 8.
Indian Territory Medical Association, Oklahoma City, May 8.
Utah State Medical Association, Salt Lake City, May 8 9.
Nevada State Medical Society, Reno, May 8-9.
Louisiana State Medical Society, New Orleans, May 8-10.
Arkansas Medical Society, Hot Springs, May 8-10.
Montana State Medical Association, Butte, May 9-10.
Kansas Medical Society, Topeka, May 9-11.
Ohio State Medical Association, Canton, Ohio, May 9-11.
American Climatological Assn., Atlantic City, N. J., May 12-14.
American Assn. of Physicians, Washington, D. C., May 15-16.
Missouri State Medical Association, Jefferson City, May 15-17.
Iowa State Medical Society, Des Moines, May 16-17.
North Dakota State Medical Association, Fargo, May 16-17.
New Hampshire Medical Society, Concord, May 17-18.
Amer. Assn. of Path. and Bacteriologists, Baltimore, May 18-19.
American Gynecological Society, Hot Springs, Va., May 22.
Illinois State Medical Society, Springfield, May 15-17. (Note change of time back to date originally planned.)
South Dakota State Medical Association, Watertown, May 22-24.
Connecticut State Medical Society, New Haven, May 23-24.
Indiana State Medical Association, Winona Lake, May 23-25.
Michigan State Medical Society, Jackson, May 23-25.

ST. LOUIS MEDICAL SOCIETY.

Regular Meeting, held April 21, 1906.

This meeting was largely attended, the subject of the evening for discussion being "Criminal Abortion, Its Medical, Religious, Moral, and Legal Aspects." Members of the clergy, bar and bench, and some laymen were in attendance, and took part in the discussion.

The St. Louis Campaign Against Abortion.

Before the regular essayists read their papers, the report of the committee on public health and legislation, Dr. C. M. Nicholson, chairman, rendered its report, showing what work has been done in securing enforcement of the law, and what is further proposed in this direction.

In a preliminary way the St. Louis Medical Society had employed an attorney to prosecute violators of the city ordinance which forbids the placing of indecent or obscene advertisements in the public press. A case against Dr. Nathaniel King, one of these advertisers, was made a test case. Dr. King advertised to treat the private diseases of men. He admitted the publication of his advertisements, but denied the constitutionality of the law forbidding same. He was adjudged guilty in the police court and fined. The case was appealed to the court of criminal correction, where Judge Hiram Moore sustained the previous conviction. The case was then appealed to the supreme court of Missouri, where it is now pending.

The attorney was then authorized to proceed against the newspapers publishing the objectionable advertisements. Informations were prepared against all the papers of St. Louis. As here again the constitutionality of the ordinance was brought into question, one paper was selected for prosecution as a test case. Unfortunately, the information was prepared against the least conspicuous of the St. Louis papers, the St. Louis *World*—this through no fault of the attorneys, however, of the society. This paper was fined, and like the case of Dr. King, the case was appealed to the supreme court.

These prosecutions have already borne fruit. The advertisements of these charlatans have been "censored" and made less indecent. The space usually devoted to these advertisements in the public press has been gradually reduced until now it is 50 per cent. less in amount than was formerly the case.

The committee on public health was then authorized to raise funds to carry on this work. About $500 has already been subscribed by members of the society.

March 24, 1906, a resolution was adopted directing the attorney to proceed against all illegal practitioners in the city. April 12, at the meeting in St. Louis of the State Board of Health of Missouri the licenses of two physicians and three midwives were revoked. One of the midwives, Anna Myers, had already been convicted in the state court for criminal abortion. Another, the Newland woman, had been convicted in the federal court for violation of the postal laws. Another midwife, Mary Murphy, had been served with charges by the state board to appear before it and show cause why her license should not be revoked. On request of her attorney her case was continued for trial until the next meeting of the board in Kansas City.

It will be the policy of this committee to secure revocation of license of illegal practitioners rather than convictions in the criminal courts, because the way is easier and evidence can be presented in a broader way than is allowed in the courts of record. In addition, nine midwives have been arrested on informations charging them with advertising to practice medicine. One has already plead guilty and has been fined.

The attorney is now preparing informations against all the incorporated medical companies doing business in the city, where the incorporators live out of town and hire other men to do their work for them. These will be in the nature of "ouster" proceedings. There are about 175 of such companies doing business in the state of Missouri. These informations will be filed next week.

Negotiations have already been started with the postal authorities to punish those using the mails in their indecent and illegal undertaking. The postmaster general has assured the committee of his hearty co-operation. The attorney of the society will also prepare a brief to be submitted to the attorney general relative to the practice of midwifery in general. The attorney is now considering the drafting of a law designed to be far-reaching and to cover all the charlatanry which is not punishable by the laws already on the books.

Medical Aspects of Criminal Abortion.

After the reading of this report, the subject proper of the scientific program was then approached.

Dr. John M. Grant read the first paper, with the above title. In his experience, over 35 per cent. of pregnant women tried to abort. Their excuses are many. One is that there is no life in the fetus, to their minds, until movement is felt; therefore it is no crime. Poverty, drunkenness of the father and ill-health are other excuses. He called attention to the drugs and instruments promiscuously advertised to make women "regular," which are simply thinly-disguised advertisements of abortifacients.

He had treated over 250 cases of criminal abortion, only ten of which were in young, unmarried women. Statistics prove that the people who are in the best shape to have large families try every means to avoid it.

There are two classes of abortionists: (1), the midwives and illegal practitioners; (2), certain members of the medical profession who are generally considered men of repute. The difficulty of detection of the crime lies in the steady refusal of these women to tell who has committed the abortion.

As remedies to stop the tide of this race suicide, Dr. Grant proposed a united effort of the medical profession, the clergy and the legislators. Women should be educated to realize that life exists in the fetus from the time of conception. They should be taught the danger to life of the performance of this operation. The newspapers should not be allowed to print the advertisements alluded to above. There should be conferences of the profession and the clergy.

Religious and Moral Aspects of Criminal Abortion.

Rev. James Sullivan, S. J., of St. Louis University, then read a paper urging that, logically, the regular physician who, with consultation, decides to perform a "therapeutic" abortion is as guilty in the eyes of the law and of God as the man or woman who performs a so-called "criminal" abortion for mere filthy lucre. He denied that the physician has the right to decide that the mother's life is more important to save than the unborn child's. He defended the doctrine of the Catholic church which does not legitimize any form of abortion. To the question that in a case where birth is impossible, must we stand by and lose the life of both mother and child, his answer was that we may not do evil that good may follow. He said that science can not decree the death of a human being in the womb nor out of it.

Criminal Abortion from a Legal Standpoint.

Mr. Fickheisen, assistant circuit attorney of the city of St. Louis, discussed this subject. Two good points in his address were: (1) The law should be changed in regard to the matter of "privileged" communications so that a physician may be allowed to testify what he has learned in the treatment of a case of criminal abortion so that the guilty man or woman who has performed the abortion may be reached; (2) a statute should be enacted in Missouri making the performance of abortion a felony and not simply a misdemeanor, as is the case now. Criminal abortion is at present only a felony when death of the victim follows, making it manslaughter. A statute making all abortions felonies should be put through by the legislature.

DISCUSSION.

In the general discussion that followed several clergymen said that they believed the remedy lay entirely with the medical profession, i. e., that the doctors should brand all whom they know practice abortion and ostracise them in every way.

JUDGE O'NEIL RYAN of the circuit court said that the doctrine of the Catholic church was as indisputable from its legality as it was from a theological standpoint.

NEW YORK ACADEMY OF MEDICINE.

Regular Meeting of the Section on Surgery, held April 6, 1906.

DR. SAMUEL LLOYD in the Chair.

Congenital Dislocation of Patella.

DR. CHARLES GOODMAN showed a boy, 13 years old, whose right patella was freely movable, and when the limb was extended the finger could be inserted beneath the inner margin of the bone. When the limb was flexed the patella overrode the external condyle, and by voluntary contraction of the quadriceps the patella could be dislocated outward completely.

Omental Hernia, with Suppuration; Operation.

DR. FORBES R. MCCREERY presented a patient, 25 years old, who was kicked in the lower abdomen by a horse. Four or five months after a lump appeared in the right inguinal region which worked down into the scrotum. At operation this mass was found to be surrounded by old cicatricial tissue, and while attempting to separate it openings were made into a cavity filled with grumous fluid. The entire mass of omentum appeared to be riddled with small abscesses. The pus had no odor and contained no tubercle bacilli. The pathologist reported that the condition was due to interference with nutrition. There was some thickening of the vessels and small foci of calcification in dead tissue.

Perineal Lithotomy for Large Vesical Calculus.

DR. C. C. SICHEL reported the case of a negro child, 2½ years old, who had an infected foreskin following circumcision. Later, much pus was found in the urine and the child suffered greatly at urination. Pus continued to increase in amount and bladder drainage was instituted. No stone was found. The child improved and left the hospital, but returned later for the cure of an umbilical hernia. At operation a greatly distended bladder was found with a large calculus in its neck freely removable. After operating on the hernia, he closed the abdominal wound and then enlarged the perineal opening and delivered a calculus, of oval shape, measuring 3½ inches by 2¾ inches. Calculus of this size was better removed by the suprapubic incision; but in this case the perineum had previously been opened and he also avoided any danger of infecting the hernial wound; therefore, the perineal lithotomy was performed.

Heteroplastic Ovarian Grafting; Pregnancy; Delivery of Living Child.

DR. ROBERT T. MORRIS said that the patient was 21 years of age, began menstruating at 15, and stopped at 19. Previous to the cessation of menstruation the function had been of average character. She was married at the age of 18 and had become pregnant soon after, miscarrying at the third month. During the two years previous to her admission to the hospital she had suffered the common symptoms of menopause. These symptoms had steadily increased and were most marked at the time when the mo thly flow should have appeared. A diagnosis of cirrhotic oöphoritis was made, and the patient was asked to remain in the hospital until opportunity was offered to obtain ovarian grafts to replace her own ovaries which were to be removed.

Shortly afterward there was occasion to operate on a patient, who was 33 years old, the mother of three children, for uterine prolapse, the ovaries being normal, except for the congestion common to uterine prolapse. Dr. Morris removed some ovarian tissue in the form of a wedge-shaped ribbon. The grafts were placed in physiologic saline solution at a temperature of 100 F. The ovaries were removed from the first patient with Tuffier's angiotribe, because the ligation methods are apt to be incomplete in securing absolute removal of all ovarian tissue. When the broad blades of the angiotribe close on the pedicle of the ovary, it is crowded away from its seat and rises above the blades, thereby avoiding the possibility of leaving any ovarian tissue behind. He did not allow even a particle of scraping from a detached ovary to fall back into the peritoneal cavity, because a single detached ovum might live long enough to invalidate the experiment. A slit was made through the peritoneum of the broad ligament on either side, parallel with the oviduct. Into each slit was placed a segment of ovary about one-half inch long and one-fourth-inch wide. A single catgut suture was placed so as to hold each graft in place. The grafts were so placed that the cut surface of the ovary lay in contact with the cut surface of the broad ligament, in order that the nutrition of the graft might be maintained through lymph circulation, pending the formation of new capillaries. The uncut surface of the ovary was allowed to project into the free peritoneal cavity, to facilitate free escape of ova. The uterus and oviducts were apparently normal.

About a month after leaving the hospital, the patient was reported as feeling well, except for hot and cold flashes. On

June 18, 1902, four months after the grafting she had menstruated, the menstruation lasting for five days. She did not menstruate again until November 16 of the same year, when she flowed for one day. The following month she flowed for four days. After that menstruation became regular. In March, 1906, the patient was delivered of a daughter weighing 7½ pounds.

Dr. Morris said that in his experiments on animals he has noted a varying degree of tolerance of one animal for the tissue from another. One animal will absorb ovaries of another animal very rapidly, while another may carry the ovaries of a third for several months. He has planned experiments along the line of preparing animals for tolerance of tissues of another animal. He carried on one line experiments suggested by the known principles of hemolysis. A series of rabbits were made immune to each other's serum, and their ovaries were then exchanged. These ovaries absorbed more readily than in animals not immune to each other's serum. Morris has done homoplastic and heteroplastic ovarian grafting in women in 14 cases, and in one case of fibro-nodular oviduct he made a homoplastic graft of the fimbricated extremity of an oviduct. The fimbricated end was fastened to the cornu of the uterus after excision of the nodular area, which included nearly all of the tube. So far as he knew there has been but one case of conception among his grafted patients, and the patient miscarried at the end of the third month. His efforts turned to homoplastic grafting for the purpose of avoiding the precipitate menopause, retaining the influence of the internal secretion of the ovary, and the normal sexual attitude of the patient, in selected cases where for any reason both ovaries have to be removed. There seems to be a fair probability also that pregnancy may sometimes occur.

DISCUSSION.

DR. C. G. CUMSTON, Boston, said that Limon in a recent article claims that microscopically two stages followed ovarian grafting. During the first stage the ovary is nourished by the interstitial fluids of the surrounding tissues. These fluids do not reach the central portion of the gland, hence the cortex alone retains its vitality. The medullary zone degenerates and disappears. At the end of three months when their nutrition is again normal, the ovaries again give evidence of functional activity, and take on the appearance characteristic of their physiologic state. In view of these facts a properly performed heterotransplantation of an ovary may result in fecundation and pregnancy.

DR. E. B. CRAGIN said that three tests should be applied to Dr. Morris' case: 1. More light might have been thrown on the condition of the ovaries at the time of the removal in regard to the presence of any developing Graafian follicles. 2. Menstruation might be absent for a number of years and yet the woman not attain to the menopause. Such ovaries might have recent corpora lutea. 3. It might be possible that a little of the ovarian tissue remained in the stump in spite of the use of the angiotribe. He thought, however, that Dr. Morris' case would stand the tests and that it is a distinct contribution to science.

DR. HENRY C. COE believes the case to be one of suspension of ovarian function, rather than one of premature menopause. He spoke of amenorrhea occurring in young women who became unusually obese. With a reduction in their weight and certain treatment the menstrual function returns, although he could not recall an instance of pregnancy following this return of ovarian function. In conservative work on the ovaries he has often noted that where only a small portion of an ovary had been left, there is a decided tendency to atrophy or cystic degeneration, and that menstruation is often irregular or even ceases.

DR. HERMAN J. BOLDT said that the fact that there were no evidences of functionating ovarian tissue in the sections made by no means proved that there was no functionating ovarian tissue present. Knowing the case and seeing the operation performed, he did not think it likely that any ovarian tissue was left behind. It was most probable and positive that the subsequent menstruation was established and caused by the engrafted ovarian tissue.

DR. ROBERT H. M. DAWBARN said, in connection with Dr. Morris' proposed experiment of injecting the blood of one rabbit into another with the idea of establishing tolerance, that Surgeon Arnold of the United States Navy, published a communication from Metchnikoff's laboratory in which it was found that a small amount of blood from the male animal injected beneath the abdomen of the female animal rendered her sterile, so far as that particular male animal is concerned. This has been tried on dogs and other animals and was found to be true in every instance. Although it has not been tried on human beings, it might open up a new field both for beneficial and dangerous work.

Operative Treatment of Fractures; Description of a New Method.

DR. CHARLES A. ELSBERG presented patients to show the success which has attended the treatment of fractures by absorbable aluminum cylinders. These cylinders should fit tightly in the medullary cavity, filling it completely. They should be hollow and should have many more perforations to allow the circulation of fluids.

DR. ROBERT H. M. DAWBARN has tried the metal magnesium in the form of staples, but found it less absorbable than aluminum.

DR. A. A. BERG questioned the value of any mechanical contrivance in cases of non-union in bone. The cause should be sought for and treated before good results can be obtained by these methods.

Fractures of the Tarsus.

DR. LEONARD W. ELY presented six patients with fractures of the tarsus and reported eleven cases of fracture of the calcaneum and three of the astragalus. The treatment was by strapping, heat and cold, massage, and sometimes a Whitman brace.

Self-Retaining Trocar and Canula for the Aseptic Evacuation of Distended Viscera.

DR. HOWARD LILIENTHAL described this instrument. The crucial test of its value was shown in a case of chronic intestinal obstruction with acute symptoms. Two punctures were made and nearly a gallon of fluid feces was evacuated without soiling the peritoneum.

TENNESSEE STATE MEDICAL ASSOCIATION.

Seventy-third Annual Meeting, held at Memphis, April 10-12, 1906.

Under the Presidency of DR. COOPER HOLTZCLAW, Chattanooga.

(*Continued from page 1216.*)

Cholecystectomy.

DR. BATTLE MALONE, Memphis, said that practically all surgeons agree that excision of the gall bladder is clearly indicated (1) in primary carcinoma of the gall bladder; (2) in gangrene, phlegmon or empyema of the gall bladder; (3) where the viscus is badly lacerated, as from gunshot wounds, etc.; (4) in impaction of stone in the cystic duct, which can not be displaced; (5) where the gall bladder is greatly thickened and contracted. The operation can be done in the average case just as quickly and in many cases more quickly and with as little danger to the patient as cholecystostomy. After drainage of the gall bladder, there are necessarily adhesions which must be a source of more or less discomfort to the patient. In view of the present accepted theory of the etiology of gallstones, it would seem that the adhesions by constant tugging on the gall bladder tend to cause a recurrence of cholecystitis and the reformation of stones. As illustrative of this, he reported two cases that came under his observation in which cholecystectomy was performed. While he would not advocate the removal of the gall bladder as a routine measure, he believes that if the operation is done more frequently, there will be less unpleasant postoperative symptoms and fewer patients will be subjected to a secondary operation. He feels less anxiety for the future of a patient whose gall bladder has been removed than when it has been drained.

DISCUSSION.

DR. JOHN L. ALLEN, Brownsville, endorsed the position taken by the essayist with regard to removal of the gall bladder. In connection with drainage of the gall bladder, if a stone is impacted in the cystic duct, drainage would give more trouble than the removal of the gall bladder.

DR. J. A. CRISLER, Memphis, quoted Dr. Murphy as saying that the ideal operation should be drainage of the gall bladder, leaving the gall bladder itself in its proper place; that it acts as a drainage tube. He thinks the removal of the gall bladder without drainage is almost a useless operation, unless the operation is done for gangrene or for gunshot wound or for some traumatic lesion.

DR. M. C. MCGANNON, Nashville, said that he has come to the conclusion that cholecystectomy is being done less and less. He does not think it is essential to remove every gall bladder that is found to be diseased. A better method of dealing with this subject is to study pathology as it is found.

DR. J. A. GAINES, Nashville, emphasized the fact that empyema of the gall bladder, unless the organ is markedly contracted, does not ordinarily demand cholecystectomy, but drainage. However, cholecystectomy is often indicated in gangrenous or traumatic conditions.

DR. LUCIUS E. BURCH, Nashville, said that in a case of gangrene or gunshot wound of the gall bladder, the gall bladder should be removed. On the other hand, if there are stones in the gall bladder, without any involvement of the cystic duct or of the common duct, drainage should be instituted.

Coprostasis.

DR. T. J. HAPPEL, Trenton, reported the case of a married woman, who gave a history of indigestion, with suffering in defecation, accentuated at each menstrual period. The patient's condition was such that it was necessary to resort to laparotomy. The author emphasized the following points: 1. The necessity of a careful examination by rectum and vagina of all cases presenting evidence of long-continued disturbance of the bowel not relieved by medicinal measures. 2. When this is refused, to dismiss the patient so as to assume no further responsibility. 3. If the patient remains in one's care, insist on laparotomy being done promptly, not allowing the patient to get *in extremis* before an operation is permitted. 4. In this case the gut was found so full that it could not be moved without tearing it. 5. The rapid improvement in the condition of the patient after operation. 6. The passage of feces from the rectum after the formation of an artificial anus. 7. The apparent discharge of feces from the bladder on two occasions, and then the cessation of this condition, with the complete stoppage of all leaks into the bladder. 8. Recovery of the patient from what seemed to be, when the abdomen was opened, a hopeless condition.

DISCUSSION.

DR. JOHN L. ALLEN, Brownsville, reported two similar cases, although their condition was not so marked or distressing. It was difficult, however, to move the bowels of these patients, even with enemas. The condition was due to an hypertrophy of Houston's valves, and he succeeded in curing both patients by clipping the rectal valves. Since then he has resorted to this procedure in many cases of obstinate constipation, with successful results. He is inclined to the belief that fully 50 per cent. of the cases of constipation are due to a thickening of these valves.

Nephrolithotomy, with Subsequent Nephrectomy.

DR. W. D. SUMPTER, Nashville, said the early recognition of renal calculi is important to prevent atrophy, hydronephrosis, infection, pyonephrosis, perinephritic abscess, fistula, anuria, and a timely operation before the patient is in a weakened state is desirable; yet the difficulty is clearly shown in Doran's report that in twenty-four kidneys and stones found, only 11 had had symptoms of calculi. Aseptic concretions may remain a long time, with no evidence of their presence. The author's patient had no definite pain when the four calculi were in the pelvis of the kidney, until the gravid uterus of six and a half months had pressed on it, and an abscess resulted. The quiescent state of the kidney, with sixteen stones remaining after nephrolithotomy, was corroborated by the citation of similar statistics. Although pain is of great diagnostic value, it is often absent or deceptive. At no time was blood detected in the urine. Frequent urination was absent until two weeks before nephrectomy, but never necessitating emptying the bladder during the night.

In nephrectomy for suppurating kidney, drainage is of great importance. Whatever the renal lesion, whatever the incision chosen, careful, conservative methods, especially avoiding the causation of shock, which is the greatest factor in the fatal termination of kidney surgery, will be productive of results that are satisfactory in the hands of the painstaking surgeon.

The Day's Work.

DR. COOPER HOLTZCLAW, Chattanooga, selected this subject for his presidential address. He said that the day's work in the life of a busy practitioner of medicine brings forth many things for consideration. It brings many thoughts, good, bad and indifferent, mostly bad and indifferent. It brings him nearer to actual life than it does most men, and if Pope is correct in saying that "The proper study of mankind is man," certainly the physician's day's work gives greater opportunity to observe both sides of life, the outside as well as the inside. In order that we may be better fitted to more correctly and accurately observe the wonderful phases and phenomena of life and death, it is proper that physicians should be better educated and prepared for this. A college education and a four-year medical course are absolute prerequisites to the practitioner, but to be most successful he must possess the heart of a lion, the brain of an Apollo, the eye of an eagle, and the gentle touch of a lady's hand.

Extrauterine Pregnancy.

DR. RICHARD BARR, Nashville, reported a case of double uterus, with extrauterine pregnancy. The patient was a negress, aged 17 years. The specimen exhibited showed a distinct double uterus, with two cavities without connection. Each cavity is connected with the corresponding Fallopian tube, and each must have opened separately into the vagina, although careful search of the vagina failed to show the opening of the right organ. The blood cyst of the right tube was taken to be an extrauterine pregnancy, with intratubal hemorrhage, and death of the ovum. The unusual features about the case are the double uterus and extrauterine pregnancy; the fact that the pregnancy had occurred by a route almost impossible of demonstration after removal of the uterus; while on the other side the way was wide open, so to speak. The pregnant tube was twisted around, swinging forward, so that it pointed to the left and rode on the anterior wall of the uterus, while its ovary lay in Douglas' cul-de-sac under the uterus, and was so uninvolved as to be without adhesions to any structures. The shutting-off of Douglas' pouch by adhesions left the pocket which contained the right ovary perfectly normal. The cecum and appendix were mobile; the latter organ was located in a vertical position just behind the median line of the abdomen.

Traumatic Lesions of the Brain and Skull.

DR. JERE L. CROOK, Jackson, limited his remarks to fractures of the vault of the skull. The symptoms of these injuries vary materially. All suspected cases are to be operated and inspected. The only occasion where doubt can exist is in fracture of the inner table alone, and here, if there are any localizing symptoms or evidence of intracranial injury, the use of the trephine is justified and demanded. If the case be one of depressed fracture, a medium-sized trephine should be used and the depressed portion elevated, thus restoring the normal convexity of the skull. If the fracture is a comminuted one, the particles should be entirely removed and the edges of the fracture smoothed with the rongeur forceps. The author reported four cases of traumatic lesions of the skull and brain, all of which demonstrated the necessity for prompt exploratory operations in all instances of cranial injury when a positive diagnosis can not be made from the original wound. He said the truest conservatism is that which gives the patient the best chance for a rapid and perfect recovery.

Osteosarcoma of the Lower Jaw.

DR. DUNCAN EVE, Nashville, removed this tumor of the jaw, which was enormous in size, being 10½ inches in its vertical diameter and 9 inches in its transverse, from a negress. The surface of the tumor was perfectly smooth, and the mass was hard and incompressible over its entire extent. The skin over the tumor was intact, and there was no enlargement of the superficial veins or infiltration, except on the cheek of the affected side.

Local and Regional Anesthesia in Rectal Surgery.

DR. A. B. COOKE, Nashville, pointed out some of the advantages of local anesthesia in rectal surgery. It is simple, safe and effective. It eliminates the dangers and discomforts of general anesthesia. Pain at the time of operation is usually absent, and when present is so slight as to be easily borne. Postoperative pain is less by far than after the old methods. The time required for the operation is greatly reduced. Confinement to bed is rendered a matter of expedience rather than necessity. The period of detention from business is diminished fully one-half. Under this method the hospital becomes a convenience and luxury rather than a dreaded essential. It is a thoroughly reliable means of affording relief in many cases which otherwise would be unsuitable for operation. It robs these operations of their terrors, and makes it possible to reclaim this work from the hands of the "no-knife 'advertisers."

Doctor, Druggist and Proprietary Medicines.

DR. J. L. ANDREWS, Memphis, said that the greatest danger in "patent medicines" is in their indiscriminate use. As conditions are now, exactly the same thing is true of proprietary medicines. He introduced a resolution, which was adopted unanimously, to the effect that the society looks with favor on the establishment of a drug store for physicians' prescriptions and the sale of staple drugs and sickroom accessories: no counter prescribing; no patents; no side lines, cigars or soda water.

The druggist derives only a small profit from the sale of "patent medicines." Recently an elaborate system was put in operation by which any druggist, who varies in the slightest particular from a fixed price, can be detected, and in the future he can buy no more of the system's goods. In the face of these restrictions the druggists ought to decline to sell "patent medicines." Let the department stores have the "patent medicine" business. According to a recent statement of a "patent medicine" maker, women buy and use nearly all the "patent medicines" that are sold. In the department stores they can buy "Rupena" and Lydia Pinkham's Pills at bargain day prices to their heart's content.

There can be no question that physicians are now prescribing proprietary medicines to an extent that is reprehensible. Give the druggist a chance to elevate and dignify his entirely worthy profession by efforts at scientific and elegant pharmacy. The medical student ought to be taught everything possible without drugs. Dignify extemporaneous prescription writing. Teach more medical chemistry. The physician ought to be able to tell at a glance whether or not his prescription has been properly compounded. The druggist is overworked and underpaid, and he is in favor of any legitimate measure which will alleviate these conditions. Dr. Andrews has a firm conviction that the druggist's best hope of professional elevation and advancement lies with physicians, and it is the plain duty of every physician to exert himself to bring about this end.

Surgical Treatment of Uterine Fibroids.

DR. J. W. BARKSDALE, Memphis, claimed that operations on fibroids have a mortality of approximately 5 per cent., which is not very much in excess of the average percentage of cases in which the abdominal cavity is invaded for all causes; yet Dr. T. B. Eastman, Indianapolis, in 117 cases operated on, found 43 that presented complications that might have terminated fatally. The author endorsed the position taken by some of the foremost workers in the field of gynecology who lay down the broad rule that all fibromyomata should be removed as soon as diagnosed.

Appendicostomy.

DR. G. C. TRAWICK, Nasnville, said that the purpose of the operation is to utilize the appendix as a means of irrigation and the introduction of medicaments through its lumen into the large intestine. That this procedure is justifiable in cases of chronic colitis and sigmoiditis after internal medication and high irrigations have proved ineffectual, the author demonstrated. The most usual disease for which this operation is performed is amebic colitis; but it has also been done for syphilitic ulcerations of the colon, multiple papilloma, chronic diarrhea with bloody stools, and mucous colitis. The author's experience with this operation has been very favorable. Out of twenty-four reports of this operation there have been 20 cures, with one death, and one result unknown, and one death from pulmonary tuberculosis.

Treatment of Amebic Dysentery.

DR. JOHN L. JELKS, Memphis, disinfects the entire colon by flushing through a tube of his own design with an acid formalin solution, fifteen to thirty minims of formalin, and a teaspoonful of boracic acid to each quart of warm water, which fluid passes out through the drainage tube. He then introduces through a small tube with a piston syringe one ounce of olive oil and a dram of bismuth subnitrate. This latter mixture relieves the painful effects of the formalin solution, and furnishes a protective coating to be inflamed viscus. Later, when the patient is placed in the genupectoral position, the proctoscope or sigmoidoscope is introduced and all ulcers are cauterized with silver nitrate, thirty to sixty grains to the ounce. The entire inflamed area is then sprayed with a mild alkaline solution, dried and insufflated with boracic acid.

Other Papers Read.

The following papers were also read:

"The Significance of Disturbed Reflexes," by Dr. Michael Campbell, Bearden; "Hemorrhage in and Around Nerve Tissue," by Dr. Hazel Padgett, Nashville; "Injuries of the Eyeball, with Report of Cases," by Dr. J. W. Price, Memphis; "Pteryglum, Its Relation to the Refraction of the Eye," by Dr. George H. Savage, Memphis; "The Treponema Pallidum of Syphilis," by Dr. Wm. Litterer, Nashville; "Vesical Fistulas in Women," by Dr. W. A. Bryan, Nashville; "Recto-Vaginal Plastic Surgery," by Dr. M. C. McGannon, Nashville; "Notes on Cases of Gastroenterostomy for Chronic Digestive Disorders," by Dr. W. D. Haggard, Nashville; "What Are the Safest Criteria for the Estimation of Renal Lesions?" by Dr. R. Wallace, Chattanooga.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Uremia.

In considering the treatment of uremia, A. R. Edwards, in the *Therapeutic Gazette*, states that no systematic outline of treatment can be given, as the actual causes of uremia are imperfectly known. On the basis that it is an autointoxication, associated with circulatory changes or increased intracranial pressure, he considers the treatment from the following different standpoints:

First.—Prevention. All irritating foods, excessive eating, intemperance, overwork, and tendencies to dyspepsia are considered in this class.

Second.—Rest and Exercise. The kidneys should be relieved by rest in the horizontal position, as the erect position not infrequently causes an increased albuminuria. The rest should be absolute as long as the heart is weak, the urine scanty or the edema considerable. Rest in bed lessens the amount of waste products to be eliminated by the kidneys, and also protects the skin and dilates the cutaneous vessels, and in this way increases its function. The vascular tension in the renal circuit is also by this means very much lessened. He speaks in this connection of treating cases of parenchymatous nephritis with rest in bed for a year, with absolute recovery. Fatigue

and exposure to damp and cold must be avoided, and relative rest and warm clothing are necessary in cases of moderate severity. He states in this connection also that practitioners do not sufficiently insist on psychical as well as physical rest. In men who are undergoing severe mental strain the nephritis markedly decreases and sometimes entirely disappears when this nervous tension has been avoided.

Third.—Springs and Climate. Only those individuals without edema and without serious heart involvement should be sent to medicinal springs. A change of climate, however, to one that is more equable and warm is advised.

Fourth.—Diet. The diet must be non-irritative, it must not tax the kidney in its elimination, the circulation must not be burdened, and at the same time the nutrition must be maintained. Disease of the glomeruli alone may be compensated by vicarious excretion of water through the lungs, skin and intestines, but the disease of the tubules whose function is the elimination of end products of the albuminoid metabolism can not so well be compensated by other functions. Consequently there is a marked necessity for the limitation of albuminous foods, and their place is taken by fats and carbohydrates. The albuminous substances are restricted only to spare the irritation of the excreting renal cells. No absolute rule can be laid down for all cases, consequently the amount of albumin intake must correspond to the condition of the individual case. He mentions the fact that too often the severity of a nephritis is measured by the amount of albumin present in the urine, which is a mistake. He recommends fats in the form of butter, olive oil and cod-liver oil, cream, etc., as very important articles of diet. Anemia and disturbed nutrition are perhaps the most distinguishing features of the parenchymatous form of nephritis as contrasted with the interstitial type. Consequently the individual patient must be considered and not the type of the disease. He speaks of a strictly milk diet as being too bulky, over four quarts being necessary to maintain nutrition; consequently it may cause marked gastrointestinal disturbance; it lacks iron, and the four quarts contain an excess of proteids; it contains too much water, thereby overloading the blood and straining the heart. The presence of phosphates and chlorids also tends to overtax the kidneys. He, therefore, regards the purely milk diet as one that is much abused. He recommends from one to one and a half quarts of milk, with a pint of cream, fats and carbohydrates, as a diet that will meet the needs of metabolism. In order to prevent the elimination of phosphates by the kidneys, he recommends that from 5 to 10 grains of calcium carbonate be given internally in order to precipitate the phosphates in the intestine.

Regarding the meat diet, the average amount recommended by him, as previously recommended by von Noorden, is 100 grams daily. He does not distinguish between the red and white meats, as the purin bodies in each are about the same. Some meat is better than too much vegetable diet, as the latter is liable to overload the stomach and bowels, and in that way to bring about intestinal disturbances. All substances containing nitrogen should be restricted. This applies not alone to meat, but to leguminous vegetable and to some extent to milk. He advises that not more than two eggs be allowed a day. He mentions the fact that raw eggs increase and in some cases induce albuminuria. The chlorids are especially to be avoided in the parenchymatous form of nephritis when edema is present. Irritants, such as cheese, relishes, horse radish, onions, rhubarb, asparagus, spices, sauces, broths, beef tea and alcoholics should be absolutely avoided. Tea and coffee should be taken only with the greatest moderation, since they aggravate or tend to produce nephritis.

Fifth.—Water. An excessive amount of water overtaxes the heart and renal system. Water can only be excreted by the kidneys when the blood pressure is increased, and many weak hearts, according to the history of cases, are produced by prolonged and excessive water drinking. The water in most of these cases should be limited to about 1,500 c.c. daily.

Sixth.—Symptomatic Therapeutic Measures. Diuretics, as a rule, should be avoided in the treatment of nephritis. In some cases diuretics are indicated with increasing edema, scanty urine and imminent uremia. In such instances he recommends cream of tartar and potassium citrate as alone being safe. They are supposed to abstract water from the tissues and to convert urea and uric acid into more readily excreted substances. Basham's mixture as a tonic and diuretic may be given in doses ranging from 1 to 2 drams (4-8) each.

Seventh.—Hydrops. Edema in so many cases threatens suffocation by pulmonary or laryngeal disturbances, increases the danger of secondary infection, such as erysilepas, and embarrasses the circulation by pressure on the afferent capillaries, and, therefore, demands treatment. It also interferes with digestion and increases the dangers of uremia to a marked degree. Edwards speaks of the value of cathartics as good eliminants of fluids as well as solids, at the same time drastic purgatives must be given great care. Sweating is not so much in vogue as in former times. While the reciprocal functions of the skin and kidneys are of great value, profuse sweating eliminate fluids rather than solids, and, quoting Leube, he holds that sweats concentrate the blood and, therefore, rather predispose to uremia. The symptoms under such circumstances may show at least great aggravation, and in some cases a fatal issue may result, rather than relief of the condition. He therefore recommends the old-fashioned full warm bath, together with the hot air or alcoholic sweat. With this method he recommends the application of the icebag to the head to prevent brain congestion, commencing with the water at the body temperature and raising it five or six degrees. After the patient has been in the bath for from twenty to thirty minutes he may be removed and wrapped without drying in the blankets. Edwards speaks of pilocarpin as an unsafe preparation. It tends to produce profuse salivation, vomiting, diarrhea, syncope and sometimes pulmonary edema. He regards incisions as superior to all other measures for the relief of the edema by mechanical means, as it extracts the fluid from the tissues with the urea and other solids. He recommends the employment of deep incisions over the lower extremities whenever the hydrops is extensive. In this way quarts of fluid may seep out during the first twenty-four hours, and one is well justified in thus incising the legs, regardless of the fact that there is always danger of an occasional infection. Sweats and drugs can never produce the same result, and the incision is less dangerous than punctures or the Southey capillary tubes.

TREATMENT OF THE CIRCULATION.

The treatment of the circulation consists in watching the heart and administering proper stimulation, and the avoidance of those things which tend unnecessarily to aggravate the heart's action. Whenever cardiac overaction is present, as is especially observed early in uremia, the high tension may be corrected by vasodilators. The iodids are recommended when no urgency is present. When extreme tension and uremia are at all likely to exist he recommends the tincture of veratrum viride in from 5 to 10 minim (.30-.65) doses every half-hour for three or four doses; or large doses of nitroglycerin grs. 1/50 to 1/20 (.0012-.003). Bleeding may relieve the intracranial blood pressure, and in this way remove some of the uremic symptoms for a time. Vomiting and diarrhea may demand gastric lavage and colonic flushings, but it should be kept in mind that they are often vicarious as well as cerebral and should not be checked too quickly. Convulsions demand the administration of morphin hypodermically or chloral in 15-grain (1.00) doses every hour for not more than four doses. These preparations, however, should be used with great caution. As a rule, bromids act too slowly.

Treatment of Acute Nephritis.

Prof. A. Robin, in *Med. Press*, recommends, in the treatment of acute nephritis or edema of the kidney, that blood letting be resorted to in the acute stage. Milk and infusions, he states, only tend to stimulate an organ which can not work. Instead of stimulating the function of a diseased gland, the smallest possible amount of work should be given to it. The patient should be permitted to drink only as much pure water as will relieve his thirst.

Wet cupping or leeches are recommended by Robin, applied over the region of the kidneys. Purgatives are indicated and if these do not act sufficiently the following mixture is recommended:

℞. Jaborandi fol. 3i 4
Aquæ bullientis .....℥vi 180

M. Ft. infusum. Sig.: One-third the amount at a dose, and the same size dose repeated every half-hour.

This will produce some salivation and profuse sweating.

Molliere, in the same periodical, recommends an ointment containing pilocarpin, applied over the surface of the body, as follows:

℞. Pilocarpinæ hydrochlor. 3i 4
Lanolini .....℥iv 120

M. Ft. unguentum. Sig.: Apply locally to the abdomen and lumbar region.

To stimulate the liver, Robin recommends a few drops of ether three or four times a day, given in a capsule. Cold enemas are of value to stimulate the intestines. To correct the dyspnea an inhalation of the nitrite of amyl, a pearl broken on a handkerchief and inhaled, is advised.

Treatment of Gout.

The following combinations are recommended by *Clin. Therapeutics* in the treatment of gout:

℞. Potassii iodidi 3ii 8
Potassii bicarb.....3vi 24
Vini colchici 3ii 8
Aquæ camphoræ .....℥xii 360

M. Ft. mistura. Sig.: One tablespoonful three times a day, after meals, in a wineglassful of water. Or:

℞. Tinct. seminis colchici
Tinct. aconiti rad.
Tinct. guaiaci
Elix. simplicis, āā.....℥ss 15

M. Sig.: One-half a teaspoonful in water after meals.

The following combination is recommended, administered in the form of pills:

℞. Ext. colchici acetici.....gr. xv 1
Ext. colocynth. comp. (B. P.)
Pulv. ipecac. comp., āā.....gr. xviii 1 20

M. Ft. pil. No. xii. Sig.: One pill night and morning. Or:

℞. Ext. colchici acetici.....gr. vi 40
Ext. rhei
Ext. aloes, soc., āā.....gr. v 30
Ext. belladonnæ.....gr. i 06

M. Ft. pil. No. vi. Sig.: One pill twice a week at bedtime.

As a liniment in acute gout the following combination is recommended:

℞. Morphinæ hydrochlor .....gr. x 6
Linimenti belladonnæ .....℥iii 90

M. Ft. linamentum. Sig.: A teaspoonful mixed with a tablespoonful of hot water and applied on lint under oil silk every four hours. Or:

℞. Atropinæ .....gr. iii 20
Morphinæ hydrochlor.....gr. xv 1
Acidi oleici .....℥i 30

M. Ft. linimentum. Sig.: To be painted over the painful joint and the joint wrapped in cotton wool.

Medicolegal

Liability of Imbecile's Estate for Medical Services.

The Court of Appeals of Kentucky holds, in D. M. Smith's Committee vs. Forsythe, that, as to a physician's claim, so much of it as was a reasonable charge against the imbecile for necessary medical services to himself and family should have been adjudged against this committee, to be levied of assets not exempt from execution. It says that for necessaries furnished to a lunatic and his family a recovery of their value will be allowed, even though his condition was known by the other party. A lunatic is liable for necessaries, not on his express contract, but on the one implied by law.

Validity of Physician's Claim Allowed in Part.

The Court of Appeals of Kentucky says, in Center's Administrator vs. Breathitt County, where the fiscal court allowed $200 on a physician's claim for $650 for treating twenty-four cases of smallpox under employment of the county board of health, that it was insisted that the physicians acting as the county board of health had not been properly appointed, or at least that no record of their appointment was produced. But the court considers it enough that the proof showed that they were at least de facto (acting) officers, were acting as a board of health, and were recognized as such by the state board. Lastly, it was urged that the physician received the $200 allowed him by the fiscal court, and, as it was allowed in full of the claim, he, when accepting it, necessarily took it on the terms on which it was allowed, and that he could not for that reason sue the county for a greater allowance. But the court says that there was no evidence that he accepted the $200, or that it was paid to him. The only evidence was that the account in the Circuit Court was credited with the sum of $200 allowed by the fiscal court. The credit may have been given on the idea that this much of the claim was no longer in controversy. In order to raise this question the defendant must show that the $200 was paid to the plaintiff under the order of the fiscal court.

Privilege Where Third Person Present at First Visit.

The Court of Appeal, First District, California, says that it was claimed in the case of Murphy vs. Board of Police Pension Fund Commissioners, that error was committed in sustaining the defendant's objection to a question asked of a physician for the purpose of showing statements or information given by a policeman at the time he attended him after he had been fatally injured. It seemed to be conceded that the object of the question was to obtain information acquired by the physician in attending the policeman, which was necessary to enable him to prescribe or act for the patient. The California Code of Civil Procedure expressly provides that a physician can not be examined in such cases, and the court has so held. It was insisted, however, that this information and statements were given in the presence and hearing of the patient's wife, the plaintiff here, and hence that they were not privileged because made in the presence of a third person. But, the court says, the question was not confined to what was said at the first visit of the physician and in the presence of the plaintiff and during that visit. The physician made in all about twenty visits. No one was present at any of the visits after the first one except the physician and the patient. The question asked included all of the time during which the patient was under the care of the physician, and hence the question did not come within the exception claimed by the plaintiff.

Individual County Officers Can Not Employ Physician.

The Supreme Court of Wisconsin says that in the case of Hittner vs. Outagamie County, an action brought by a physician to recover $317 for professional services and medicine furnished to an alleged poor person, the plaintiff charged that he was employed by three members of the county board and the district attorney of the county to furnish this aid and care. It was not alleged that these officers were given authority by the county board to employ the plaintiff or any other person in providing county aid to poor persons. There is nothing in the provisions of the statues under which poor persons are to be relieved at the expense of the county, indicating that individual members of the county board or the district attorney have any authority or power to act for the county, unless express authority be granted them by the action of the county board. As held in the case of Patrick vs. Town of Baldwin, 109 Wis. 342: "The statute creates a liability to relieve destitute persons, but not a liability to individuals who may voluntarily perform that service. It empowers appropriate agents of municipalities to make their liability effective by necessary contracts to that end, and imposes on such agents the duty to exercise such power. . . . Performance of that duty by the person designated by law is absolutely essential to create a binding obligation on the municipality to compensate one for relieving a poor person legally entitled to relief at its expense." It appearing that the county officers whom the plaintiff alleged employed him to furnish the relief at the county expense had no authority to make such a contract, the complaint must be held to state no cause of action.

Making Autopsy in Order to Procure Burial Permit.

The Court of Appeals of Kentucky says, in the case of Meyers vs. Clarke and others, which was brought by a mother

to recover damages for an alleged unauthorized autopsy on the body of her daughter, who had died suddenly at a charity hospital to which she had been sent the day before by the city, that the mother and stepfather were notified of the death. The stepfather employed an undertaker to go to the hospital and take charge of the body and remove it to the girl's home and prepare it for burial. The undertaker, or one of his assistants, went to the hospital, and was told that the body was in the morgue, and after conference with the interne at the hospital, went to the home of the girl and notified the stepfather that the body was in bad condition and that a speedy burial was necessary, and suggested that the physicians at the hospital had to make an autopsy to ascertain the cause of death in order to procure a burial permit from the board of health. Before he could report to the physician in charge of the hospital what the stepfather had said, two physicians took it for granted that there were no objections, because of the silence of the undertaker's assistant, and proceeded to hold an autopsy, which disclosed that the death was from perforation of the bowels, caused by typhoid fever. The jury were instructed that they should find for the plaintff, unless they believed from the evidence that the physicians in making the autopsy did so for the sole purpose in good faith of ascertaining the cause of death in order that they, or one of them, might be able to correctly give a certificate stating the cause of death for the purpose of obtaining a permit for the burial of the body. They should also find for the plaintiff, unless they believed from the evidence that the autopsy was properly and decently performed with due regard to the sex of the deceased, and without making any unnecessary incisions into, or mutilations of, the body. If they found against the two physicians, they should also find against the undertaker, provided they further believed from the evidence that the undertaker, after having custody of the body, consented that an autopsy might be made, and voluntarily gave to either of the physicians, or both of them, permission to make the autopsy. But, if they believed, from the evidence, that the physicians in making the autopsy made it decently, with due regard to the sex of the deceased, making no unnecesary incisions into or mutilation of the body, and that the autopsy was made in good faith for the purpose of ascertaining the cause of death in order that such a certificate might be given as would procure a permit for the burial of the body, the jury should find for the defendants. The court holds that these were proper instructions, and affirms a judgment for the defendants. It says that there was nothing in the record to show that the undertaker or the physicians purposely mutilated or disfigured the body, but that their sole purpose was to comply with the rule of the board of health, so as to enable the undertaker or physicians in authority to procure a burial certificate, which was required by the board of health under the charter and ordinances of the city. The court sees no reason in law or otherwise why the city authorities or the board of health should not make the requirements as above set out.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

April 14.

1 Biographic Clinic on Gustave Flaubert. G. M. Gould, Philadelphia.
2 *Saline Beverages in Typhoid Fever and Their Effects on Heat Dissipation. J. B. Todd, Syracuse, N. Y.
3 Diagnosis of Surgical Diseases of the Kidney. A. A. Berg, New York.
4 *Turbinectomy. E. H. Griffin, New York.

2. **Saline Beverages in Typhoid Fever and Their Effects on Heat Dissipation.**—Todd declares that if a proper amount of fluids and alkaline salts is given in the earliest stage of the disease they will prove of advantage. If they are withheld, however, the efforts of the protective forces of the body are hampered. The germicidal powers of the blood are preserved by saline beverages. If water is not given in abundance, heat dissipation is lessened. Todd administers a saline beverage, consisting of eight ounces of water, ten grains of sodium chlorid, five grains of potassium bicarbonate and a teaspoonful of lemon juice, which produces a mild effervescence. There is about two-thirds of a grain of free citric acid in each dose.

4. **Turbinectomy.**—Griffin does not believe in complete turbinectomy. He declares that only so much of the bone should be removed as is necessary to restore the normal canal and to give back to Nature the proper function of the nose. The great objection to the complete operation is that it makes the passage too large and removes something which belongs there and which has a function to perform. Partial turbinectomy restores the normal anatomy.

New York Medical Journal.

April 14.

5 Intraperitoneal Shortening of the Round Ligaments. J. M. Baldy, Philadelphia.
6 Relation of the Visiting and House Staff to the Care of Hospital Patients. W. G. Thompson, New York.
7 The Convalescent Branch Hospital and Its Relation to Hospital Reform. S. S. Goldwater, New York.
8 Need for Accuracy and Uniformity in the Reports of Hospitals. F. A. Cleveland, New York.
9 *Technics of the Radical Tympanomastoid Operation when Complicated by the Anterior Position of the Sigmoid Sinus. W. S. Bryant, New York.
10 The Physician's Duty to His Patient. W. Lindley, Los Angeles.
11 Aims and Limitations of Intranasal Surgery in the Treatment of Chronic Non-suppurative Affections of the Middle Ear. T. J. Harris, New York.
12 *Influence of Certain Antipyretics on Nitrogen Metabolism. H. Morgenbesser, New York.
13 Two Cases of Postpartum Eclampsia Due to Diabetes. S. J. Essenson, New York.

9. **Radical Tympano-Mastoid Operation.**—Bryant reports several cases to show that the idea which is more or less prevalent in the profession that the radical operation is seriously complicated when the sigmoid sinus approaches the external auditory meatus is unwarranted. The author describes his method of operating fully.

12. **Influence of Antipyretics on Nitrogen Metabolism.**—The results obtained by Morgenbesser differ in many respects from those reported by other investigators. For sodium salicylate he did not get as high an increase in the total nitrogen, only 9/16 per cent., while he obtained no increase in uric acid; in fact, a slight diminution. In the case of quinin he obtained a total nitrogen decrease of 13 to 19 per cent., urea decreased 22 to 28 per cent., uric acid decreased 40 to 50 per cent., purin bases decreased 40 to 50 per cent. In the case of acetanilid he obtained: Total nitrogen increased 14 to 21 per cent., urea increased 19 to 35 per cent., uric acid increased 12 to 44 per cent. The metabolism decreased after ceasing the administration of acetanilid.

Boston Medical and Surgical Journal.

April 12.

14 Methods and Aims of the Physician. E. O. Otis, Boston.
15 *Traumatic Defects of the Skull, Their Relation to Epilepsy. A Clinical and Experimental Study of Their Repair. D. P. Allen, H. L. Sanford and D. H. Dolly, Cleveland, Ohio.
16 Defensive Properties of the Organism. S. C. Dickerson, New Bedford, Mass.

15. **Traumatic Defects of the Skull.**—The authors urge that all traumatisms to the skull resulting in bone defects should be repaired as soon as possible, not awaiting the possible development of epilepsy, and should epilepsy follow trauma, thus making the removal of bone necessary for its relief, the defect caused by operation should be repaired at once. The method proposed by Allen for covering defects of the skull is as follows: The scalp is removed from over the defect in the skull and the connective tissue covering the brain is carefully dissected away. In certain cases in which the injury to the brain tissue has occurred as the result of traumatism, it may be necessary to trim away a portion of the brain with the scissors, since the connective tissue may be firmly connected with the brain tissue itself. The borders of the opening are carefully examined to see if any portion of the bone projects downward, and if so it is removed by means of rongeur forceps. All hemorrhage should be controlled before the bone flap is inserted.

The scalp is removed from an added area of the skull of equal size with the opening, care being taken that the peri-

osteum covering the skull is left intact and that the portion of skull laid bare is as thick as possible. Thus the posterior parietal region is preferable to the temporal region. On the area thus laid bare a circular or elliptical incision is made, blocking out a portion of periosteum equaling in form and size the defect which is to be covered. A sharp, narrow chisel is then employed to split from the outer surface of the skull the portion of bone adherent to the overlying periosteum. By placing the graft thus obtained between two gauze sponges moistened in warm normal salt solution and laying it on the table it may be flattened out by a few slight blows of the mallet. The plate of bone thus prepared is laid on the opening in the skull, the bone being next to the brain. The wound is then closed by drawing over it the scalp and suturing it loosely in place. A cigarette drain made up of gauze and surrounded by gutta percha protective tissue is inserted through the incision at the dependent point, so that any excess of blood may be drained away into the dressing. The dressings are changed ordinarily on the second day in order to remove the cigarette drain, after which a second bandage is applied. This bandage remains in place for perhaps six or eight days longer, or until the wound has entirely healed. By this method seven patients have thus far been operated on.

Lancet-Clinic, Cincinnati, Ohio.

April 14.

17 *What Is the Present Status of Electricity as a Therapeutic Agent in Gynecologic Practice? C. D. Palmer, Cincinnati.
18 Alkaloids in Therapeutics. W. F. Waugh, Chicago.
19 Problems Concerning the Use of Alcohol. T. D. Crothers, Hartford, Conn.
20 *Ether Anesthesia by the Drop Method. F. N. Shipp, Columbus.

17. See abstract in THE JOURNAL, June 17, 1905, p. 1958.

20. **Ether Anesthesia by Drop Method.** — During the past fourteen months Shipp has administered ether 337 times by the open-drop method. The average time of inducing anesthesia was 6 minutes and 10 seconds. The time varied from 40 seconds to 12 minutes. Initial vomiting did not occur in a single case. In 65 per cent. of the cases there was no struggling or choking, in the remaining 35 per cent. excitement and choking was of a mild degree. No patient needed stimulation, the cause of which could have been attributed directly to the anesthetic. No operation was delayed, even for a moment, on account of the condition of the patient. Forty-eight per cent. of the patients had no nausea or vomiting following the administration; 40 per cent. were slightly nauseated, vomiting once or twice, but were comparatively free from all sickness within two or three hours. A fraction of over 11 per cent. were quite ill, being nauseated from 12 to 24 hours. In less than 1 per cent. severe vomiting followed, lasting from 3 to 6 days. There was no postoperative pneumonia in any case. Nephritis occurred in the case of three patients; one was a woman suffering from melancholia, which developed during pregnancy; the second was a patient suffering from appendicitis of ten weeks' standing; the third was a woman with a large uterine fibromyoma. In all three patients the physical condition was an extremely poor one.

St. Louis Medical Review.

April 7.

21 Lycanthropy. (To be continued). J. Knott, Dublin, Ireland.

The American Journal of the Medical Sciences, Philadelphia.

April.

22 Recent Advances in the Physiology of the Digestive Organs Bearing on Medicine and Surgery. W. B. Cannon, Boston.
23 Hepatoptosis or Floating Kidney. J. F. Binnie, Kansas City.
24 *Case of Hodgkin's Disease with Relapsing Fever. S. Ruffin, Washington, D. C.
25 *Bacteriologic Findings in Fifteen Cases of Epidemic Cerebrospinal Meningitis. G. C. Robinson, Philadelphia.
26 Primary Thrombosis of the Lateral Sinus Without Involvement of the Middle Ear. F. M. Cunningham, Macon, Ga.
27 Lymphatic Drainage of the Pharyngeal Tonsil. G. B. Wood, Philadelphia.
28 *Belladonna Poisoning Due to Belladonna Plasters. C. M. Doland, Philadelphia.
29 Bacteriologic Study of the Certified Milk of Philadelphia. A. H. Stewart, Philadelphia.
30 *Osteoarthritis. P. W. Nathan, New York.
31 Lumbar Puncture. S. J. Kopetzky, New York.
32 *Non-parasitic Cysts (Congenital) of the Liver, with a Study of Aberrant Bile Ducts. E. Moschcowitz, New York.

24. **Hodgkin's Disease.**—The easiest and surest method of diagnosis, according in Ruffin, lies in the removal and histologic study of a diseased gland. It may be impossible to make a conclusive diagnosis during life in any other way. Glandular tuberculosis may be excluded by the tuberculin test. Some cases of Hodgkin's disease are characterized by a typically relapsing fever.

25. **Bacteriologic Findings in Epidemic Cerebrospinal Meningitis.**—In a study of fifteen cases of epidemic cerebrospinal meningitis made by Robinson, the organism isolated from the spinal fluid, circulating blood, pus from the conjunctiva and from the central nervous system at autopsy agrees in all respects to the *Diplococcus intracellularis meningitidis* of Weichselbaum. It was isolated in pure culture from the spinal fluid of the 14 cases in which lumbar puncture was performed and is to be considered the causal agent in all the cases. This organism was obtained from the circulating blood of two of the four investigated cases, but in one only did it grow on the various culture media. Robinson thinks that the organism is probably only an occasional invader of the circulating blood, although it may be present in the blood for many days during the course of the disease and does not occur only as an agonal invader of the blood. The *Diplococcus intracellularis meningitidis* may occur in the pus of purulent conjunctivitis, a complication not infrequently seen in meningitis. It was isolated from one of two cases which showed this complication. Secondary lung infections with pyogenic organisms are frequent, and a terminal bronchopneumonia was found in 5 of the 6 cases that came to autopsy, all of which showed the presence of pyogenic cocci.

28. **Poisoning from Belladonna Plasters.** — Doland reports three cases in which belladonna poisoning followed the application of belladonna plasters. The symptoms were typical. In the case of two of the patients the symptoms appeared after a few days. The third patient showed evidences of poisoning two hours after a small belladonna plaster had been placed on the chest.

30. **Osteoarthritis.**—Nathan discusses the etiology and pathology of certain forms of joint disease and presents a scheme for the classification of joint diseases generally which divides them into two groups, the first according to their generic pathology and the second according to the primary location of the disease in the bones or the synovia. The classification based on the generic pathology divides these affections into (1) the inflammatory or infectious and (2) the trophic. Each division is subdivided further into (a) the synovia and (b) the osseous forms. Included under the inflammatory type are tuberculous, syphilitic, gonorrheal and typhoid arthritis, the group name being infectious arthritis. These are the synovial forms of arthritis. The group name for the osseous forms is infectious osteoarthritis. The subdivisions are the same as for the synovial forms. The group name for the synovial forms of the trophic type is trophic arthritis, which includes the metabolic or autotoxic arthritis, senile, arteriosclerotic and toxemic arthritis. The trophic osteoarthrites include the same forms, but are characteristic of the osseous type of trophic arthritis. The classification according to the location of the disease is made on the same basis and includes the same forms and type.

32. **Non-Parasitic Cysts of Liver.**—Moschcowitz studied 85 cases of non-parasitic cysts of the liver recorded in the literature. He found that they are associated with congenital anomalies in other parts of the body, especially with cysts of the kidney. Such cysts of the liver are always associated with congenital anomalies of the liver, consisting in aberrant bile ducts, which may be extrahepatic or intrahepatic. These aberrant ducts are embryonal "rests," formed in the course of development of the liver, and have thus far been found only in cystic livers or in livers associated with cystic kidney. Non-parasitic cysts of the liver have their origin in these aberrant ducts and may assume two forms: one arising from infiammatory hyperplasia of the ducts, the other by retention of fluid in these ducts, as the result of congenital obstruction.

American Journal of Obstetrics, New York.

April.

33 *Present Status of Pelvimetry. H. Ehrenfest, St. Louis.
34 *Embolism Following Abdominal Section. W. Krusen, Philadelphia.

35 *Some Operative Aids in Abdominal Work. E. A. Balloch, Washington, D. C.
36 *Aseptic Removal of an Infected Fibroid Uterus. H. A. Kelly, Baltimore.
37 *New Form of Blood Cell. F. A. Stahl, Chicago.
38 What Information Can We Obtain from Symptomatology in Gynecologic Cases? G. T. Harrison, New York.
39 What Information May We Obtain from Symptomatology in Gynecologic Cases, with Special Reference to Backache. D. Bissell, New York.
40 *Congenital Absence of Lower Third of the Vagina. H. N. Vineberg, New York.
41 Absence of the Uterus Associated with Bilateral Ovarian Hernia and Vicarious Hemorrhage. R. T. Gillmore, Chicago.
42 *Cancer of the Breast. I. S. Stone, Washington, D. C.
43 Typhoid Fever in Pregnancy. J. T. Kelley, Washington, D. C.
44 Associated Nervous Conditions in Gynecology, with Especial Reference to the Climacterium and Allied States. (Concluded). S. W. Bandler, New York.

33. **Status of Pelvimetry.**—Ehrenfest believes that this useful method of examination would find a wider application, both at the hands of the general practitioner and the specialist obstetrician, if the actual value of mensuration of certain pelvic diameters were more appropriately appreciated and if writers would be more careful not to create erroneous and exaggerated ideas concerning the utility and accuracy of the various methods of pelvimetry.

34.—See abstract in THE JOURNAL, Jan. 13, 1906, p. 151.

35. **Operative Aids in Abdominal Work.**—Experience has taught Balloch the necessity of a very thorough preliminary examination of all patients, the desirability of simplicity in technic, the value of rapidity in operating and the benefits accruing from attention to little things. For sterilizing the hands he has found Harrington's solution, composed of bichlorid of mercury, alcohol and hydrochloric acid, very effective. He has also used eserin, according to Craig's method, with good results. He sounds a note of warning as to the indiscriminate use of salt solution. He believes that it does as much harm when improperly used as it does good in appropriate cases. In cases where meteorism is a prominent feature he employs an enema, consisting of equal parts of milk and molasses, as recommended by the younger Senn.

36. **Aseptic Removal of Infected Fibroid Uterus.**—In order to avoid contamination of the abdomen during the removal of an infected fibroid uterus, Kelly adopted the following plan: He first tied off both broad ligaments down to the cervix and the uterine vessels; then, in order to hold the cervical stump well up in the pelvis, he passed a strong catgut ligature through the tied-off ovarian vessels, under the uterine vessels and out through the round ligaments on each side. When this ligature was tied it served to control the uterine vessels and at the same time to keep the cervix high up in the pelvis after amputation. An additional ligature was applied separately to the uterine vessels. Then, lifting the uterus, which was thus freed down to its cervical portion, strongly upward, he began to amputate through the cervix, first on one side and then on the other, as well as in front and behind. In this way the attachment of the fibroid uterus above was gradually narrowed down to the cervical canal and some of the surrounding tissues until it formed a pedicle about 2 cm. in diameter and perhaps 1 cm. in length. He then grasped the cervical canal thus isolated, but not opened with an artery forceps, and proceeded to amputate just below the forceps with a Paquelin cautery. The uterus was thus removed with its cavity closed in a perfectly aseptic manner. Catgut sutures, which had been applied to the right and left angles of the divided cervix before the amputation, were then tied at once, and with several more sutures the stump was completely and promptly closed. The patient made a rapid and prompt recovery.

37. **New Form of Blood Cell.**—The cell described by Stahl is a crescent-shaped, nucleated red-blood corpuscle, which he found in a 6-weeks-old ovum. In the Bauchstiel area of the chorion, in the amniotic cavity, there is a trabeculated tissue of arachnoid delicacy. In these meshes Stahl found this new cell and many multinucleated corpuscles, to which he has applied the term "mulberry form of nucleated red-blood corpuscles." In a supplemental paper he expects to show that the three popular theories for the origin of the non-nucleated red-blood corpuscles are incorrect.

40. **Congenital Absence of Lower Third of Vagina.**—In this case Vineberg found a shallow blind sac occupying the vaginal introitus. The defect was remedied partly by the vulvar and partly by the abdominal route. The operation is described in full.

42. **Cancer of the Breast.**—By bringing the flap which covers the pectoral muscle forward and upward to the intraclavicular horizontal line where the incision is first made, Stone covers the space left by the removal of the breast. The manner of procedure is as follows: A horizonal incision is made, extending from the insertion of the pectoralis major nearly parallel to the clavicle and about two and one-half inches from it to a point below the first and second third of the clavicle. The length of this line is usually about five inches. A circular incision is now made around the breast, which usually has its center at the nipple and a diameter of from four to five inches. If the induration in the gland is at the periphery of the breast the ouline must include that portion, and of course, as far beyond as possible, always including the nipple. The downward incision is completed by extending it until it meets the circular outline around the breast. The skin is dissected from the pectoral muscle and the muscle is removed as indicated above, taking the muscle and gland away together.

The second incision mentioned may commence about two inches inward from the insertion of the large pectoral and is made nearly over the vertical incision of the outer portion. After the mass of muscle and gland has been removed, the vessels are tied and the flaps adjusted. There is no necessity for much exposure of the raw surfaces. Drainage is best secured by a combination of rubber tube and gauze wick. In every case there will be need of some liberation of the skin from points where there is excessive traction. The auxiliary flap is brought upward and forward and secured to the infraclavicular flap, and the upper or pectoral flap is brought downward to cover the space by taking away the breast. The result is a line much like the letter "S." Its advantages are mainly to furnish additional skin covering, to permit greater ease in dissection of the axilla and to leave no scar tissue under the arm.

American Journal of Surgery, New York.

April.

45 Urinary Examinations for Uric Acid, with Especial Reference to the Detection of Uric Acid Calculi in the Kidney and Bladder. L. Heitzmann, New York.
46 Value of Blood Examination in Obstetrics and Gynecology. I. S. Wile, New York.
47 *Gallstones in the Cystic Duct—with Description of a Means of Dislodging them in Certain Cases. L. H. Dunning, Indianapolis.
48 *Common Duct Obstruction. J. W. Long, Greensboro, N. C.
49 Plaster of Paris, and How to Use It. (Continued). M. W. Ware, New York.
50 Comparative Study of the Various Methods of Terminating Pregnancy and Labor. S. Marx, New York.
51 *New Method of Intestinal Anastomosis, by Means of the Cautery. R. H. Powell, Grafton, W. Va
52 Case of Appendicitis with Early Rupture of the Appendix. W. H. Axtell, Bellingham, Wash.

47 and 48.—See abstracts in THE JOURNAL, Jan. 6, 1906, pp. 64-65.

51. **New Method of Intestinal Anastomosis.**—Powell has devised a new operation for lateral enteroenterostomy which is equally applicable for the performance of lateral anastomosis of any of the abdominal hollow viscera where immediate anastomosis is not imperative. Up to the point of incising the intestine the operation is the same as that usually performed by suture, but instead of incising the intestine a thermocautery or electrocautery, heated to a dull red, is drawn along the intestine for one and one-half or two inches until the entire thickness of the intestinal wall is devitalized but not perforated. The same procedure is followed out on the opposite portion of intestine, so that when encircled by the suture in completing the operation the two cauterized areas will be in direct apposition. Immediate anastomosis is not secured, but in the course of two or four days, after firm adhesions are formed, the slough separates and the communication is complete. The peritoneal cavity is walled off effectually. The operation so far has been confined to dogs, but has proved successful.

Journal of Cutaneous Diseases, New York.
April.

53 *Egg-Shell Nail. J. N. Hyde, Chicago.
54 Two Cases of Multiple Tumors of the Skin in Negroes, Associated with Itching. J. F. Schamberg and R. Hirschler, Philadelphia.
55 Meralgia Paresthetica. J. C. White, Boston.
56 Case of Recurrent Bullous Eruption of the Face. Probably Pemphigus Hystericus. F. J. Shepherd, Montreal.
57 *Pityriasis Rosea. D. W. Montgomery, Berkeley, Cal.

53. **Eggshell Nail.**—Under this title Hyde describes a condition of a nail in which the color is similar to that of the inner face of an eggshell, an exceedingly delicate combination of white and purple. This condition is seen usually accompanying acne and favus, of which several cases are cited. The patients were all women, all young, all below the standard of sound health, none having any distinct affection of the circulatory system—all, however, exhibiting marked interference with stability of vascular equilibrium, and each suffered from hyperidrosis of the hands and feet. The group represented two social classes—individuals delicately nurtured, not engaged in self-supporting toil, and those employed in more or less exacting labor. To a variable degree in each the nails of both the fingers and toes were involved in the change. None of these patients applied for relief of the nail lesion, but for the skin eruptions mentioned above.

57. **Pityriasis Rosea.**—Montgomery treats these cases according to Jamieson's method. The patient is soaked daily for half an hour in a bath, to which two or three teaspoonfuls of Condy's fluid have been added. A salicylate ointment (from three to five parts of salicylate acid in 100 parts of vaselin) is applied freely to the skin.

Journal of the Association of Military Surgeons of the United States, Carlisle, Pa.
April.

58 Initial Examination of the Recruit for the United States Army. H. Hamilton, Harrisburg.
59 *Physical Examination of Recruits for the Illinois National Guard. C. Adams.
60 *Medical and Surgical Observations during a Three Year's Tour of Duty in the Philippines. (To be concluded). J. M. Banister, Ft. Riley, Kansas.
61 Detection of Simulated Defects of Vision. W. B. Banister, Jefferson Barracks, Mo.
62 Ear Affections and Military Service. E. Amberg, Detroit, Mich.

59. **Examination of Recruits.**—Adams outlines the method of introduction of the physical examination of recruits for the Illinois National Guard. He says that the results of this physical examination were apparent at the outbreak of the Spanish-American War when, on the mobilization of the Illinois National Guard at Springfield, a larger proportion of recruits was accepted from the First Infantry, I. N. G., than from any other regiment of state troops. The details of the method employed are set forth fully. During the past thirty months 716 men underwent physical examination for enlistment in the First Infantry; of this number 88.4 per cent. were found physically fit for service.

60. **Observations in the Philippines.**—Banister discusses dysentery, sprue, pulmonary tuberculosis, malarial diseases, typhoid, bubonic plague and smallpox. He says that diseases of the respiratory organs, except tuberculosis, are of infrequent occurrence, while scarlet fever, diphtheria and yellow fever are unknown in the Philippines. The prevalence of intestinal parasites in the native population is something remarkable.

American Journal of Urology, New York.
April.

63 *Rupture of the Bladder. E. Loumeau, Bordeaux, France.
64 *Conservative Surgical Treatment for Certain Cases of Enlarged Prostate. F. Cabot, New York.
65 Injuries to the Vena Cava During Nephrectomy. I. Sagols, Montpellier, France.

63. **Rupture of the Bladder.**—Loumeau reports three cases. The first case shows that lithotrity, in inexperienced hands, may result in a laceration of the bladder and, on account of non-repair of the accidental lesion, may be followed by a fatal peritoneal infection. The second case is an example of spontaneous perforation of the bladder, the result of a vesical cancer. The third case is an example of a mixed rupture of the bladder, spontaneous in appearance but in reality produced by a trauma dating back thirty years. A hypogastric traumatism received at that time resulted in a contusion of the bladder with a prevesical hematoma followed by adhesions between the bladder and the abdominal wall. These adhesions, under the influence of violent and repeated movements, finally broke away from the walls of the bladder at their point of implantation on the organ, from which resulted a tear in the bladder wall.

64. **Conservative Surgery of Enlarged Prostate.**—The plan advocated by Cabot is first to do a cystotomy, preferably by the perineal route, this to be followed in a week or ten days, the patient's condition warranting it, by a perineal or suprapubic prostatectomy. The method is said to be applicable in the case of men suffering from the effects of an enlarged prostate and whose vital organs have been so damaged that even moderate surgical shock is quickly followed by death. Cabot favors the perineal route and while operating uses continuous hot irrigation through the penile urethra. The irrigation tends to lessen hemorrhage and so decreases the shock.

California State Journal of Medicine, San Francisco.
April.

66 Motor Complications of Herpes Zoster. A. W. Hewlett, San Francisco.
67 *Educational Treatment of the Neurasthenic and Hysterical Condition. J. T. Fisher, Los Angeles.
68 Demonstrations of Dilatations of the Descending Thoracic Aorta. C. M. Cooper.
69 *Epididymotomy in the Treatment of Blenorrhagic Epididymitis. L. Bazet, San Francisco.
70 Pathology and Treatment of Tetanus. T. C. McCleave, Berkeley, Cal.
71 Requisite Laboratory Equipment for the General Practitioner. R. L. Wilbur.
72 Gastroenteric Autointoxication; Its Recognition and Significance and Its Relation to Arterial Hypertension. (To be continued). W. A. Briggs, Sacramento.

67. **Educational Treatment of Neurasthenia.**—Fisher urges that the patient be given a full explanation of his condition and the meaning and significance of the different symptoms. The apprehension and fixed ideas must be counteracted by suggestion, and all faulty habits must be corrected. If necessary, individual symptoms should be relieved or dissipated by some mechanical device—electricity or a bitter pill—all given with direct suggestion. A systematic method of life should be insisted on. For every hour of the day some act or task should be prescribed to keep the mind of the patient busy. This acts as a strong moral and physical corrective.

69. **Epididymotomy in Blenorrhagic Epididymitis.**—Bazet has operated on 65 patients. He found the gonococcus in one-third of the cases. He has not had any atrophy, hernia, necrosis of the testicle, nor any mortality. In his opinion epididymotomy affords the greatest and quickest relief in the treatment of blenorrhagic epididymitis. He performed his first operation in 1897 with the following technic: He chose the ligamentum serotalis for the incision, seizing firmly the swollen indurated nodule of the globus minor of the epididymis in the left hand. An incision one inch long is made downward into the cavity of the epididymis. At first the swollen nodules were punctured and the walls of the cavity were stitched to the incised skin; later Bazet adopted the plan of performing an epididymotomy, that is, he opened the cavity of the epididymis, exposed the nodules, relieved the tension, punctured the nodules, if pus were present, and stitched the walls of the epididymis to the skin. The wound is packed with gauze impregnated with one to ten parts respectively of ichthyol and glycerin, and the gland is well supported. The patient is able to be up in from four to seven days. The wound heals in a week. The danger of sterility is lesened by this method.

Wisconsin Medical Journal, Milwaukee.
March.

73 *Delayed Chloroform Poisoning. J. D. Madison, Milwaukee.
74 Colles' Fracture. A. J. Pullen, N. Fond Du Lac.
75 Coli-Pyelitis. A. L. Kastner, Milwaukee.
76 Otitis Media and Its Treatment. N. M. Black, Milwaukee.
77 Adiposis Dolorosa. U. O. B. Wingate, Milwaukee.

73. **Delayed Chloroform Poisoning.**—Two cases of toxemia following the administration of chloroform are reported by Madison. The first patient was operated on for appendicitis, the appendix being partly gangrenous. The duration of the anesthesia was about one hour and thirty minutes. The patient died eight days after the operation with symptoms of intense toxemia. During the first three or four days the wound did well, and the condition of the abdomen seemed entirely

satisfactory. With the onset of the symptoms of intoxication the wound did not do so well, and toward the last the discharge became considerable and rather foul. There was no evidence of general peritonitis. Forty-eight hours after the operation both temperature and pulse were normal, then they became subnormal and remained so until the last twenty-four hours, when the temperature rose to 100.6. In the case of the second patient an appendiceal abscess was evacuated, the anesthesia lasting about forty-five minutes. The patient did well until about forty hours after the operation, when she suddenly became delirious. The temperature rose to 100. There was no evidence of a brain lesion. After a few hours the patient grew quiet, but soon passed into a comatose condition, in which she died about fifty-eight hours after the operation. While in the comatose condition it was noticed that the breath had a sweetish odor.

The third patient died in coma seventy-four hours after operation. The operation in this case was a clean and satisfactory one, the appendix being somewhat inflamed but quite markedly distended by a serous fluid. The patient recovered readily from the anesthetic and seemed to be in an entirely satisfactory condition. The temperature was 98.6. The following morning pain was complained of in the upper part of the abdomen; the pulse was rapid; the temperature was 102.5. The patient was quite restless and vomited at intervals, the vomitus being brownish and at times quite dark. There was intense jaundice. In these three cases the immediate effects of the anesthetic were usually recovered from entirely and there followed a period during which the patients were comfortable and appeared to be doing well. The symptoms of toxemia appeared suddenly in each case, death resulting invariably.

Louisville Monthly Journal of Medicine and Surgery.

April.

78 Complicated Gallstone Cases and Their Treatment. A. M. Cartledge, Louisville.
79 Co-operative Clinical Research, an Important Factor in Combating Tuberculosis. F. C. Wilson, Louisville.
80 *Amputation in Diabetic Gangrene. W. O. Roberts, Louisville.
81 *Strapping of Sprained Ankle. V. P. Gibney, New York, G. A. Hendon, I. Abell, and L. Bloch, Louisville, Ky.
82 Porro-Cesarian Operation. I. Abell, Louisville.
83 *Injury to Eye Followed by Death Seven Weeks Later. J. M. Ray, Louisville.

80. **Amputation in Diabetic Gangrene.**—Roberts' patient, a man, aged 55, had been perfectly healthy up to the age of 20, at which time he suffered from erysipelas of both hands and forearms, from which he did not recover completely for about three months. Six years ago he again had what he supposed was erysipelas, beginning on the plantar surface of the left foot. In a short time the whole foot was involved and an amputation was performed through the middle third of the leg. Six months ago a sore appeared on the big toe of the other foot, which was followed in about six weeks by a sore on the little toe. This toe became gangrenous and the gangrene extended to all the toes and the foot nearly to the ankle joint. On examination it was found that the urine was excessive in amount and contained one-half of 1 per cent. of albumin, a large quantity of sugar and many hyaline and granular casts. The leg was amputated through the middle third of the thigh. The wound healed without suppuration, the patient leaving the hospital in eight weeks.

81. **Treatment of Sprained Ankle.**—The participants in this symposium favor the so-called Gibney dressing of adhesive plaster applied in interlacing crosses around the foot and ankle, beginning about one inch above the junction of the great toe and tarsus, and extending to about two inches above the malleoli.

83. **Fatal Injury to Eye.**—Ray reports the case of a boy who was hit in the eye, the trauma producing a large jagged triangular wound of the cornea. The lens was protruding through the rupture. The eye was enucleated. A peculiar mental condition existed which steadily became worse. A second operation disclosed a perforation in the orbital plate. The lateral wall of the orbit and the external angular process were removed. In spite of every effort that was made to save the life of the patient, he died seven weeks after the injury with symptoms of brain abscess.

Ophthalmic Record, Chicago.

March.

84 Care of the Eyes of School Children. S. S. Bishop, Harrisburg, Pa.
85 Effects of Prolonged Lactation on the Eye. H. Moulton, Ft. Smith, Ark.
86 Cavernous Angioma of the Eyelid. S. D. Risley, Philadelphia.

Annals of Otology, Rhinology and Laryngology, St. Louis.

December.

87 Etiology and Treatment of Mycosis Occurring in the Upper Respiratory Tract. J. Sendziak, Warsaw.
88 Mastoid Operations in Aural Service of Boston City Hospital, October, 1903, to May, 1904. G. A. Leland, Boston.
89 Obstruction of the Eustachian Tube a Factor in Postoperative Mastoid Fistula and in Chronic Suppuration of the Middle Ear. T. Hubbard, Toledo.
90 Carcinoma of the Larynx. S. E. Solly, Colorado Springs.
91 An Unusual Case of Laryngeal Syphilis Requiring Tracheotomy. C. F. Theisen, Albany.
92 Infective Thrombosis of the Sigmoid and Lateral Sinuses After Acute Mastoiditis, Death from Meningitis. A. Knapp, New York.
93 Meningitis; Its Symptomatology, Diagnosis and Treatment. S. MacCuen Smith, Philadelphia.
94 Symptomatology, Diagnosis and Treatment of Encephalitis and Brain Abscess. F. L. Jack, Boston.
95 Symptomatology, Diagnosis and Treatment of Sigmoid Sinus Thrombosis. J. F. McKernon, New York.
96 Pathologic Findings of Intracranial Complications of Middle-Ear Diseases. T. J. Harris, New York.
97 Personal Attention an Essential Feature in the Treatment of Chronic Aural Discharges. F. C. Hotz, Chicago.
98 Tumors of the Ear. A. P. Voislawsky, New York.
99 An Interesting Anomaly of the Facial Canal. A. J. Prentiss, Iowa City.
100 New Method of Tympanic Massage by Means of Metallic Mercury. J. C. Beck, Chicago.

Philippine Journal of Science, Manila.

February.

101 Keeping Qualities and the Causes of Rancidity in Coconut Oil. H. S. Walker, Manila.
102 Principal Insects Injurious to the Coconut Palm. C. S. Banks, Manila.
103 Beriberi in the Japanese Army During the Late War: The Kakke Coccus of Okata-Kobubo. M. Herzog, Manila.
104 Vaccination Against Plague. R. P. Strong, Manila.
105 Philippine Wood Oils. A. M. Clover, Manila.
106 Orbitoides from the Binangonan Limestone. W. D. Smith, Manila.

Journal of the Medical Society of New Jersey, Newark.

March.

107 Infantile Eczema. H. J. F. Wallhauser, Newark.
108 Diet in Typhoid Fever. D. E. English, Millburn.
109 Review of the Eighth Decennial Revision of the United States Pharmacopeia. H. A. Pulsford, South Orange.
110 Practical Anesthesia. J. A. Maclay, Paterson.
111 Clinical Study in Blood Pressure at the Lincoln Hospital. L. F. Bishop, New York.

The Texas Medical News, Austin.

March.

112 Shall We Dispense? W. O. Wilkes, Waco.
113 Urethral Calculus in a Boy Twenty-one Months Old. K. H. Aynesworth, Waco.
114 Hemorrhoids. C. E. Belcher, Munson, Pa.
115 The Heart Murmurs. G. W. Baskett, Van Alstyne.

Western Medical Review, Lincoln, Neb.

March.

116 Treatment of the Individual Case in Appendicitis. C. C. Allison, Omaha.
117 Too Much Medicine. J. L. Sutherland, Grand Island.
118 Obstruction of the Bowels. R. D. Mason, Omaha.
119 Diagnosis of Bright's Disease. L. B. Pillsbury, Lincoln.

Annals of Gynecology and Pediatry, Boston, Mass.

March.

120 Gynecologic Surgery in the Manhattan State Hospital. L. Broun, New York.
121 Illustrative Cases of Uterine Fibroids. J. V. Young, New York.

Denver Medical Times.

March.

122 Treatment of Insomnia. S. D. Hopkins, Denver.
123 Id. J. E. Courtney, Denver.
124 Treatment of Insomnia of Nervous Origin. G. A. Moleen, Denver.
125 Treatment of Insomnia. E. M. Brandt, Denver.
126 Id. E. Delehanty, Denver.

The Laryngoscope, St. Louis.

March.

127 Operation for Straightening the Nasal Septum. G. Sluder, St. Louis.
128 Does Denker's Radical Operation on the Antrum of Highmore Represent Progress in Surgery of the Sinuses? H. Stolte, Milwaukee.
129 Some Evils of Mouth Breathing. C. P. Linehart, Columbus.
130 Indications for the Submucous Resection of the Nasal Septum. R. Levy, Denver.
131 Case of Rhinolith. T. Faith, Chicago.
132 New Instrument for Excision of the Tonsils. J. G. Roberts, Oskaloosa, Iowa.
133 Instruments for Submucous Resection of Septum. W. W. Carter, New York.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

March 31.

1 Tabes Dorsalis. D. Ferrier.
2 *The Cystoscope. D. Newman.
3 *Prognosis in Posterior Basal Meningitis. O. Hildesheim.
4 Case of Posterior Basal Meningitis, with Few Cerebral Symptoms. J. G. G. Corkhill.
5 Folie A. Deux (?). C. Mercier.

2. **The Cystoscope.**—Newman discusses the cystoscopic appearances in some diseases of the bladder and kidneys, and describes a method of illustrating diseases of the bladder and the appearances in renal disease by the opaque projector. He summarizes his findings as follows:

1. When one orifice is altered and the other normal, the renal lesion is on the side of the abnormal ureter, and the character of the deformity of the orifice may indicate the nature of the renal lesion.
2. Active congestion and swelling of the mucous membrane in the neighborhood of the orifice and along the line of the ureter, also swelling and pouting of the lips, denote acute irritation of the pelvis or parenchyma of the corresponding kidney.
3. A dilated orifice, the lips being sharp and clearly defined, the mucous membrane between the lips acutely congested, while the color of that of the bladder is little changed, denotes recent and acute inflammation or mechanical irritation in the corresponding pelvis.
4. A dilated orifice, the lips being thickened and only slightly rounded, the mucous membrane between the lips of a dark-red color, while the mucous membrane of the bladder is deeply injected and pigmented, especially along the line of the ureter, denotes descending ureteritis with dilatation.
5. An elongated or dilated mouth with hyperemia of the lips indicates acute inflammation of the parenchyma or recent distension of the renal pelvis.
6. A punched-out orifice, marked thickening of the lips, induration and congestion of the surrounding mucous membrane, indicate a dilated ureter with ascending ureteritis, the infective process extending along the surface by continuity.
7. A pinhead opening one well-defined ridge of deeply-pigmented mucous membrane denotes induration of the walls of the ureter from ureteritis, the infective material being conveyed from the primary focus in the kidney or bladder, principally through the lymphatic channels.
8. Pinhead contraction of the mouth without other vesical changes denotes spasm induced by the presence of a rough calculus impacted in an irritable ureter.
9. Inflammation of the mouth and thickening of the lips, with inflammatory changes limited to the mucous membrane immediately surrounding the ureter orifice, denotes mechanical irritation of old standing.
10. Simple dilatation of the mouth, without much thickening of the lips and with congestion limited to the orifice and neighboring parts, suggests mechanical irritation of recent origin.

3. **Prognosis in Posterior Basal Meningitis.**—Hildesheim claims that it is almost impossible to give any prognosis early in the disease. Although the prognosis is better the older the child, nevertheless one-third of his patients who recovered either completely or partially were under six months of age at the time of the onset of the disease. In not a few cases the prognosis depends largely on careful and unremitting attention to the artificial feeding of the child, and every effort should be made to avoid setting up a catarrh of the nasopharynx and respiratory system.

The Lancet, London.

December 31.

6 Tabes Dorsalis. D. Ferrier.
7 Distribution and Recovery of Peripheral Nerves Studied from Instances of Division in Man. J. Sherren.
8 *Perforated Ulcer of the Duodenum. S. M. Smith.
9 *Cases of Erythema Scarlatiniform Sent Into Hospital as Scarlet Fever. J. Beard and T. W. N. Barlow.
10 Fatal Hemorrhage in Operations on the Chest Wall for Empyema. T. Oliver.
11 Case of Fracture of the Surgical Neck of the Humerus. F. C. Wallis.
12 Case of Primary Sarcoma of the Lung. H. W. Webber.

8. **Perforated Ulcer of Duodenum.**—Smith reports 14 cases. In 9 of these there was a history of preceding digestive disturbance, but in only 3 were the previous symptoms suggestive of duodenal ulceration. Melena did not occur in any case, and hematemesis occurred in only one case. In most instances the perforation took place while the patient was at work—in 2 cases while lifting a heavy weight. The characteristic sudden severe pain in the abdomen was the initial symptom of perforation in every instance. The pulse rate at the time of examination in 10 cases was from 100 to 144, in 7 of these over 120. Smith regards the following as important localizing symptoms: 1, The history may suggest duodenal ulcer; 2, the localization of the original pain of perforation to the right hypochondrium; 3, symptoms referred to the right side of the abdomen and most marked in the appendix region, but with a definite history of onset in the right hypochondrium.

In 2 cases the ulcer was excised; in 4 cases it was sutured; omental grafts were made use of in 3 cases. In 7 cases general and profuse irrigation of the peritoneal cavity with hot normal saline solution was employed. Of these 7 patients, 5 recovered. In 4 cases the peritoneal cavity was mopped out with moist swabs. Of these 4 patients all died. In none of the cases was drainage dispensed with; in 4 it was suprapubic and epigastric; in 5 it was suprapubic, epigastric and right lumbar; in 2 it was epigastric only. Of the first set, 2 patients recovered, but one of these had to be drained in the right lumbar region after a few days. Of the second set 3 patients recovered. Of the last set none recovered.

9. **Erythema Scarlatiniform and Scarlet Fever.**—Beard and Barlow direct attention to three important points in the differential diagnosis of these two affections: 1, The very early onset of desquamation; 2, the desquamation taking place while the erythema is in the florid stage, and, 3, the erythematous base observed after desquamation and which remains for some time, with its peculiar glistening and greasy appearance.

Journal of Tropical Medicine, London.

March 15.

13 A Hemogregarine of Mammals and Some Notes on Trypanosomiasis in the Anglo-Egyptian Sudan. A. Balfour.

Indian Medical Gazette, Calcutta.

March.

14 Malarial Fevers Among Europeans in Calcutta, and Their Differentiation from the Seven-day Influenza-like Fever. L. Rogers.
15 Rupture of the Spleen. D. G. Crawford.

Journal of the Royal Army Medical Corps, London.

March.

16 Medical Organization of the Japanese Army. W. G. MacPherson.
17 Hygiene and Preventive Medicine During 1905. R. H. Firth.
18 Bubonic Plague in Cape Colony. (Continued). J. A. Mitchell.
19 *Operative Treatment of Fractures, Introducing Some Original Methods of Bone-union by Simple Mechanical Means. R. G. Anderson.
20 Occupation for Soldiers in Hospital. E. C. Freeman.

19. **New Method of Bone Union.**—The methods described by Anderson involve the use of simple contrivances and obviate the necessity for drilling bone and using wire. The contrivances employed are called by him the medullary spike and the bone fracture clamp. They depend for their effect in the one case on the support of the medullary cancellous tissue alone, and, on the other, on the sole support of the compact bone. The medullary spike consists of a double-pointed steel spike, divided by a raised flange into two unequal lengths, each from a quarter to two inches long, and varying according to the necessity of the case, alterations being made, if necessary, during the operation by means of a file or cutters. The fracture clamp is a simple instrument, consisting of two toothed jaws, each formed by the junction of small parallel steel rods, armed at their extremities with sharp spikes, and joined centrally by a free pivot, so allowing their close adaptation to any inequality of surface or variation of position which may be considered advisable. The jaws grasp the bone on either side of the fracture and are placed, one superficially, the other deeply. They are joined by a tension-screw of fine steel, which pierces the pivots and passes directly through the line of fracture, to the obliquity of which it accommodates itself accurately. The tension wire, some three or four inches long, is finely threaded and provided with a minute nut, which can be screwed down, thus clamping the jaws firmly home to any required position, after which any surplus is filed off and discarded. The medullary spike, used by itself, is admirably suited to most cases of transverse or moderately oblique fracture in shafts with a small central cavity. These include all the long bones with the exception of the femur, humerus and tibia, and also in all packed cancellous extremities and in one of parallel bones in which the sound bone acts as a natural splint to its broken companion. The fracture clamps are suited to almost any break, if not too oblique or spiral in direction, and if, in such oblique cases, no more transverse position can be utilized. The method of application of both spike and clamp are described in detail.

Bulletin de l'Académie de Médecine, Paris.

22 (Year LXX, Nos. 8-9.) Two Poisonous Alkaloids in Urine of Lepers.—Découverte de 2 alkaloïdes vénéneux retirés des urines des lépreux. Lara and A. Gautier.
23 *Sur le sérum anti-dysentérique. L. Vaillard and C. Dopter.
24 *Sur la sérothérapie de la fièvre typhoïde. Brunon.
25 (No. 10.) *Sérothérapie de la fièvre typhoïde. Josias.
26 *Absorption de l'acide carbonique contenu dans l'air confiné. N. Gréhant.
27 (No. 11.) *La genèse des eaux thermales. A. Gautier.
28 *Anatomie pathologique du rhumatisme tuberculeux. Tuberculose inflammatoire et ses localisations ostéo-articulaires. A. Poncet and R. Leriche.
29 *Sur une nouvelle fonction glandulaire des cellules fixes du tissu conjonctif: la fonction rhagiocrine (new function of connective tissue cells). J. Renaut.
30 (No. 12.) Dusts and Tuberculosis. Inquiry in Regard to Morbidity and Mortality Among 257 Carpenters and Men Employed in Packing-rooms and in Making Inlaid Floors.—Poussières et tuberculose. L. Landouzy.
31 Prophylaxie des maladies contagieuses dans les stations balnéaires. De Ranse.

23. **Serum Treatment of Dysentery.**—Vaillard and Dopter for years have been making a special study of dysentery and its treatment with a prepared serum. Shiga and Kruse used cultures alone to immunize the animals in making their serum, ignorant of the existence of a soluble dysenteric toxin. Vaillaird and Dopter immunize their horses by inoculation on alternate weeks with progressive doses of living bacilli and of the soluble toxin. The toxin is obtained by filtering through porcelain a culture in Martin bouillon kept for twenty days at a temperature of 37 C. The injections are made under the skin at first and later in the veins. The serum of the horses acquires immunizing properties against the bacillus of dysentery and against its toxin. Ninety-six patients with dysentery have been treated with this serum. The number includes 50 with from 15 to 20 stools in twenty-four hours; 18 with from 30 to 80; 24 with from 80 to 150, and 4 with from 150 to 288 stools. All recovered except one patient in the last group. The serum has an almost immediate influence on the local and general symptoms of the dysentery, and recovery is complete in two or three days in the mild and in four or six days in the severest cases. Relapses were observed only twice, and in these instances they occurred the tenth day or third week after the last injection of serum, when its effect was exhausted. Some of the patients had been treated for weeks with calomel, lavage of the intestines, etc., without appreciable effect. The condition changed as soon as the serum was injected and the patients were cured in two or three days. The minimal dose is 20 c.c., injected under the skin, repeated once or twice in the severer cases. Its harmlessness has been amply established.

24-25. **Serum Treatment of Typhoid Fever.**—Brunon reports the results of the use of antityphoid serum in 100 children from 3 to 16 years old. The typhoid mortality in his service with other methods of treatment was 17 per cent., but under serotherapy it dropped to 3 per cent. In the fatal cases the serotherapy had not been applied until the fifteenth, sixteenth and thirty-eighth days respectively. It has an unmistakable action on the disease, modifying and attenuating it as a whole, shortening its duration, reducing the chances for complications, and the mortality.

Josias speaks from an experience with 182 cases of typhoid fever in children and the mortality was about the same as Brunon's, 3.8 per cent. He is convinced that the outlook for a typhoid patient is very much better when the serum is injected as an adjuvant to the usual measures. He confirms its absolute harmlessness.

26. **Technic for Absorbing the Carbon Dioxid in Confined Air.**—Gréhant's previous communication on this subject of regenerating vitiated air was mentioned in these columns on page 390. He shut up a dog in a cylinder and in four hours found that the air in the cylinder contained 127 times as much carbon dioxid as pure air, and in eight hours 185 times as much as pure air, or 5.5 per cent. The next day he repeated the experiment, but connected the cylinder with his apparatus for absorbing the carbon dioxid. At the end of two hours the air in the cylinder contained 6 times as much carbon dioxid as pure air; at the end of six hours, 5.6 times, and at the end of eight hours only 5.3 times as much. The proportion of oxygen in the air in the cylinder at the end of eight hours was 13.4 and 14 per cent. in these experiments. He thinks that the results obtained warrant the assertion that with his absorbing apparatus and a little extra supply of oxygen, it will be possible for human beings to breathe and to live even in absolutely confined air.

27. **Genesis of Thermal Waters.**—Gautier describes his conception of the dehydration of the rocks under the influence of the heat in the center of the earth and of chemical affinities, and the escape to the surface of the water thus formed by volcanic action.

28. **Inflammatory Tuberculosis and Its Localization in Bones and Joints.**—Poncet and Leriche have continued their study of tuberculous rheumatism, mentioned on page 139 of the last volume of THE JOURNAL. The pathologic anatomy of the process, they say, has demonstrated that tuberculous rheumatism is after all merely the osteo-articular form of inflammatory tuberculosis. It has three ways of developing: the inflammatory phase may pass into a condition in which the bone becomes rarefied, or a condition of hyperostosis or of softening of the bone (partial or diffuse osteomalacia). The different types of the joint affections of growing children and of the joint deformities of adolescence are frequently of tuberculous origin. Many vague inflammatory lesions of the bones and joints probably have had tuberculosis as the primary agent. This throws a new light on the large group of surgical affections of the bones and joints in the young approaching or just passing puberty, explained by some writers as tardy rickets, by others as the result of overburdening or overwork. This theory of dystrophy or mechanical strain or overwork, has been advanced for genu valgum, painful flat foot, coxa vara, scoliosis, etc., in short, for all the bone and joint deformations of youth. The conception of an inflammatory tuberculosis readily explains them. The condition called tardy rickets is the result of the inflammatory process, passing through the phases of osteomalacia and then of condensing osteitis. The first phase explains the part played by mechanical causes, the overburdening of a softened bone. The second phase explains the definite fixation of the lesions, their final healing leaving deformity, spontaneously incurable. Any infection may realize this anatomo-clinical syndrome, Poncet remarks, but the tubercle bacillus is alone responsible in the large majority of cases. This inflammatory tuberculosis is generally encountered in the "minimal tuberculous," individuals with latent tuberculosis, often almost impossible to detect, but an early diagnosis is frequently of great importance.

29. **New Glandular Function of the Connective Tissue Cells.**—Renaut found nearly two years ago that the fixed cells of the connective tissue are endowed with a secretory activity which seems to confer glandular functions on them. Like the cells of the true glands, such as the parotid and pancreas, they elaborate in the heart of their cytoplasm a large number of granules possessing all the histologic and cytologic characters of the "pro-ferments." The granule grows to maturity in the center of a vacuole. The cell does not throw off these granules as such, but acts like a true ferment-producing gland, and redissolves its segregated granules before excreting the substance. He calls this the "rhagiocrinic function," coining the term from the Greek words for granule and select. Such a connective-tissue cell should henceforth be regarded as a true interstitial glandular cell. The cells in question are spherical, are able to migrate, and are the phagocytes *par excellence* of the connective tissue. Their "rhagiocrinic function" is in evidence in early life, and subsides when the organism has reached maturity. It is not lost, but remains latent until aroused by some irritation or other stimulus. The connective tissue thus forms an enormous gland whose elements can be aroused to glandular activity at any time. These elements pass through the stages of the round, migrating "rhagiocrine," then the fixed "rhagiocrine," then the branching, and then the anastomotic "rhagiocrine," growing more and more quiescent with age. The material secreted by the "rhagiocrines" has certainly some relation to the growth of the connective tissue, as the secretion lasts until the organism has reached maturity and is then suspended. A large number of these connective-tissue 'rhagiocrines" still persist free in the fluids of the serous cavities, even in the adult. They migrate by their own ame-

boid movements, and are not dependent on the circulation. They retain their extremely active phagocytic properties long after they have settled down into quiescent fixed cells, incorporating blood corpuscles and foreign bodies with like avidity. The task now before us, he declares, is to learn the means of stimulating and controlling this "rhagiocrinic function." It may prove of far-reaching importance.

Semaine Médicale, Paris.

32 (XXVI, Nos. 12-13.) *La lymphangite pulmonaire cancéreuse généralisée. L. Bard.

32. **Generalized Cancerous Lymphangitis of the Lungs.**—In the 2 cases described by Bard the condition was a surprise when discovered postmortem. In retrospectively reviewing the cases, however, he noted certain points which might suggest the diagnosis when encountered again. The anatomy of the parts allows the isolated and almost simultaneous generalization of the process throughout the lymphatic system in the lungs in a way impossible in other organs. Two of the few cases of the condition on record were reported as cases of suppurative lymphangitis, the mistake not being discovered until afterward (Raynaud and Troisier). Rapidly progressive, intense dyspnea, without explanatory auscultation findings, in a patient presenting evidence suspicious of a cancerous or ulcerative lesion in the stomach, should always suggest the possibility of the condition under discussion. In some cases a concomitant bronchitis masked the specific symptoms. The condition seems to occur mostly in the early stages of cancer. The rapid diffusion is characteristic of cancer in the young. All the cases on record were in comparatively young persons, between the ages of 20 and 35, all males. Bard long ago pointed out that in young subjects cancer seems to have a peculiarly rapid growth with unforeseen complications. It is possible, he adds in conclusion, that the cases described as "galloping cancer" of the lungs or "galloping consumption," may have included some in which the trouble was this generalized lymphangitis secondary to an unsuspected cancer elsewhere.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

33 (XXXII. No. 9, March 1.) *Health of Prussian Army.—Der Gesundheitsstand der preussischen Armee in hygienischer Beleuchtung. Werner.
34 Mode of Dissemination of Pulmonary Tuberculosis.—Ueber die Verbreitungswege der Lungen-tuberculose vom klinischen Standpunkt. A. Fraenkel.
35 Sources of Error in Examining Hearing.—Ueber Fehlerquellen bei der Tonuntersuchung Schwerhöriger, nebst einigen physiologisch-akustischen Bemerkungen. A. Lucae.
36 Ueber eine scheinbar pathogene Wirkung der Spirochæte dentium. Miller.
37 (No. 10.) *Ueber naturgemässe Therapie. Goldscheider.
38 Geisseln bei Hühner- und Recurrens-Spirochäten (flagella). Zettnow.
39 *Mercury-Water Lamp for Treatment of Skin and Mucous Membrane.—Quecksilberwasserlampen zur Behandlung von Haut und Schleimhaut. Kromayer (Berlin).
40 Kollision von Zwillingen bei der Geburt (twin births). K. Frankenstein.
41 Ein neuer Nasensauger (nasal aspiration), C. Leuwer.
42 Untersuchungen über die Wirkung aggressiver Flüssigkeiten des Streptococcus pyogenes (action of aggressive fluids). E. Weil.
43 Fall von essentieller Nierenblutung (hemorrhage from kidney). G. v. Illyes.
44 Verhaltungsmassregeln bei akuter Gonorrhœ (conduct in acute gonorrbea). Schadel.
45 Prussian Contagious Disease Law.—Das preussische Seuchengesetz vom 28. August, 1905. M. Kirchner.

33. **Hygiene in Prussian Army.**—Werner describes the progress of hygiene in the army and the reduction of morbidity. Comparing the year 1873 with that of 1902, the statistics show that nearly 2,500,000 days of treatment of the sick were saved, and 2,462 lives. In 1873 an average of 31.9 out of every 1,000 men were sick, while in 1902 the average was only 25.3. The morbidity of typhoid in 1902-3 was .85 in each 1,000 soldiers; in France it was 4.3; in Austria, 1.9, and in Italy, 4.1. The mortality from typhoid during the same period was .09 in Prussia, Saxony and Wurttemberg; .59 in France; .25 in Austria, and .78 in Italy. The average of venereal diseases during this period was 19.4 in Prussia, Saxony and Wurttemberg; 29.3 in France; 57.5 in Austria; 91.5 in Italy, and 122.7 in England. The venereal diseases have diminished in the Prussian army by 49 per cent. since 1873, and syphilis by 59 per cent.

37. **Therapy According to Nature.**—In Germany there is an organization of charlatans who call themselves "Nature healers" and claim to cure by "natural methods," without drugs, and who are rabid in their denunciations of regular medicine. Goldscheider's article shows that all their "natural methods" are part and parcel of regular medicine, and have been for ages, and that drugs also come under the head of "natural" measures under certain circumstances. The lessons learned from experience apply only to the conditions under which the experience was gained. Attempts to generalize these lessons under other conditions are liable to prove disastrous. He summarizes the aims of a truly "natural therapy," "according to Nature," as: 1, Imitation or direct support of the natural healing processes, as in serum and antitoxin treatment and vaccination; 2, indirect support of the natural healing process, as by mechanical measures to relieve ascites, digitalis for a weak heart, sedatives and other symptomatic measures; 3, any measure which directly promotes the natural curative reaction of the healing process is therapy according to Nature. Administration of a drug, digitalis or morphin, for instance, at the proper moment may aid Nature as effectually as any mechanical, gymnastic, hydriatic or dietetic measures. The latter do not exhaust the Nature-supporting measures. It is a mistake to suppose that treatment "according to Nature" must necessarily mean without drugs. Medicines are "Nature"; some of them are actually already component parts of our bodies, as phosphorus, iron, calcium and even iodin. Our food consists of substances that are, some of them, foreign to our bodies. Other ways in which the natural healing processes can be promoted are by general treatment and by guidance and regulation of the natural healing process. The latter may occur with excessive intensity, overshooting the mark, or it may require the removal of disturbing or dangerous by-effects. Fever probably is one of those reactions which overshoot the mark. Therapy has to maintain the interests of the organism as a whole against the one-sided tendency of the natural healing process, or substitute the latter in case of its absence. The natural curative process may die down from lack of response to stimuli, in which case therapy interferes to arouse the reaction anew and to start up the natural healing process again, as by massage, electricity, stretching of nerves, passive congestion, etc. The sixth branch of "therapy according to Nature" is by training parts and organs to vicarious function, as, for instance, by compensatory exercise treatment of ataxia, by transplantation of tendons for paralyses and muscular defects, by gastroenterostomy in case of stenosis of the pylorus, etc. All these measures come under the head of "therapy according to Nature," or "natural methods."

39. **Mercury Lamp for Treatment of Skin and Mucous Membranes.**—Kromayer gives an illustrated description of a mercury and water lamp for phototherapy for which he claims many advantages. Among them is the fact that the therapeutic effect is obtained in one-half the time required for the iron lamp and in from one-third to one-fifth of the time of the Finsen lamp. The area that can be treated is much larger, generally 7 by 7 cm. at a time. The lamp can be arranged so as to throw the light on mucosæ of nose, throat, rectum, uterus, bladder, etc. Its application is convenient for physician, patient and attendant, while the expense is much less than that of the ordinary lamps, as only 4 ampères are required. He has used it with good results in a number of cutaneous affections, including eczema, acne, lupus, obstinate syphilitic lesions and in gonorrhea.

Muenchener medizinische Wochenschrift.

46 (LIII, No. 6.) Sero-Activität und Phagocytose. M. Gruber and K. Futaki.
47 Ueber Pyelonephritis in der Gravidität. E. Ruppanner.
48 *Passive Congestion in Treatment of Acute Suppurative Processes.—Behandlung akut eitriger Prozesse mit Stauungs-Hyperämie. F. Colley, Id. Herhold.
49 Zur Technik des Bierschen Verfahrens mit Stauungs-Hyperämie. J. Mindes (Drohobycz).
50 Zur Pathogenese der congenitalen Stuhlverstopfung (Hirschsprungsche Krankheit.) A. Bittorff.
51 Roentgen-Strahlen und Radium bei Epitheliom. E. Schiff.
52 Operativ geheiltes Nebennierenkystom (suprarenal cystoma). Schilling.
53 Zur Kenntnis der intrauterinen Totenstarre (cadaveric rigidity). G. Sommer.
54 Transformation of Lengthwise Direction in Extension Dressings.—Umsetzung der Längsrichtung bei Extensionsverbänden im queren zug. A. Hoggmann (Carlsruhe).
55 Powdered Peat for the Uncleanly Bedridden to Lie On.—Lagerung von unreinen Kranken auf Torfmull. O. Zippel.

56 (No. 7.) *The Toxin Causing Eclampsia.—Das Gift der Eklampsie und die Konsequenzen für die Behandlung. Zweifel. Id. G. Lockemann.
57 *Pure Milk Supply.—Ueber die Gewinnung einwandfreier Milch. W. Hempel.
58 Sterilized Milk and Infant Mortality.—Statistische Erhebungen. Manteufel (Halle).
59 Munich Milk Supply.—Die Kuhmilch. Zaubzer.
60 *Eine klinische Fettprobe für die Fäces (test for fat in feces). A. F. Hecht (Vienna).
61 Weitere Mittellungen über die Spirochæte pallida (Treponema Schaudinn). K. Herxheimer and M. Opificius.
62 Instrumenttisch mit elektrischem Anschluss-Apparat für Hals-Nasen- und Ohrenärzte (otorhinologic stand). Helbing.
63 Emotions and Heart Disturbances.—Beziehungen von seelischen Empfindungen zu Herzstörungen. F. Veiel.
64 Measures to Arrest Diphtheria.—Bekampfung der Diphtherie. B. Fischer. (Concluded).
65 Kriegschirurgische Erfahrungen im Russisch-Jap. Kriege 1904-1905. W. v. Oettingen.

48. **Passive Congestion in Treatment of Acute Suppurative Processes.**—Colley has become a staunch adherent of Bier's method of artificial hyperemia, with which he now has had extensive experience. In order to demonstrate the bactericidal action of the procedure, he made a bouillon suspension of pus from an empyema on the elbow, and to one-half the amount he added some edema fluid. He then injected the fluid into mice and found that the animals injected with the bouillon to which the edema fluid had been added did not become so sick as those injected with the untreated bouillon, and none died. He applied passive congestion to the sound arm, and added some of the edematous fluid thus derived to the bouillon, but was unable to detect any influence on the virulence of the bouillon afterward. These and other experiments have convinced him that the limb separated by the constriction from the rest of the body is the seat of biologic processes of a special kind. The edema fluid in the constricted limb contains antibodies which exert a destructive action on microorganisms and aid in the struggle against the invading affection. It is a familiar fact that similar antibodies are found in the serum of blisters formed by application of tincture of iodin. Colley has also noticed that the inguinal glands on both sides and the axillary on the sound side are liable to swell during the period of constriction. The swollen lymph glands are slightly tender, but conditions return to normal when the constriction is removed. The results of passive congestion are good in all acute suppurations, but really remarkable effects are obtained in puerperal mastitis and in inguinal buboes. In one case of encapsulated appendiceal abscess the patient presented indications of a severe septic affection. Under the diagnosis of septic thrombosis of the portal vein operation was deferred, and he was treated by application of a large Bier aspirating cup between the costal arch and the iliac crest, the vacuum was induced with a syringe. The symptoms subsided and the patient promptly recovered. A few months later the appendix was removed and the man has been healthy since. Colley has also applied the aspirating cup in cases of perimetritic exudates and gonorrheal salpingitis. The cup or jar used is a large one, and the pelvis is always raised. The procedure is not applicable to very stout persons. He has had no opportunity to try this technic in actinomycosis, but anticipates that it will prove effectual. The necrotic plug in an advanced furuncle usually comes out the second or third day of aspiration, but incipient furuncles are aborted in a single sitting. His experience with 2 diabetics was not encouraging; the application of the aspirating cup caused a circle of gangrene, which has deterred him from its use in severe cases. Treatment of eczema with the aspirating jar is a promising field, judging from his experience to date. He has found that the action of the passive congestion was enhanced by warm baths (37 C.-98 F.), except in cases of cutaneous affections. The stimulation to the circulation aids in transporting away the last traces of the passive congestion. The physician who hesitates to try the new method in the clinic can test it on himself first. Its future is as assured, Colley thinks, as that of chloroform, diphtheria antitoxin or herniotomy for incarcerated hernia. It seems to be destined to work as great a transformation in the treatment of acute inflammations as Lister's method of treating wounds.

Herhold describes his experience with 35 cases, summarizing his conclusions in the statement that passive congestion may give extremely fine results, especially in case of felons and furuncles. On the other hand, it is not a general panacea, and it may fail. In case of severe phlegmon, it must be applied with caution and with conscientious supervision of the case. The little apparatus described and illustrated by Mindes is a contrivance by which the constricting band can be tightened or loosened with a key.

56. **Toxin Causing Eclampsia.**—Zweifel's later researches have confirmed his previous conclusions as to the importance of zinc paralactate in the urine of eclamptics as the expression of deficient oxidation. His previous communication on the subject was mentioned on page 545. The main indications are, theoretically, to supply oxygen, but inhalation of oxygen has not proved so effectual as anticipated. He has begun to inject it subcutaneously, and although he has not yet observed much benefit its harmlessness has been established. He has lately been pumping air into the mammary glands, like the veterinarians. He has also tried to make the shallow respiration of the unconscious eclamptic deeper by faradization of the phrenic nerves.

Lockemann describes the technic for examining the urine and organs for zinc paralactate, and also reports the findings in 4 eclamptics. The blood in the umbilical cord contained ten times more of the lactate than the maternal blood in one case. The crystals that formed indicated the presence of some other organic acid besides the paralactate.

57. **Pure Milk Supply.**—Hempel describes the conditions in a model dairy near Dresden, in which milk is obtained under such aseptic conditions that it can be sent to Bremen without ice during the summer, and has been found sweet and pure after crossing the ocean in an ice-box. He gives illustrations of a contrivance which ensures the even mixing of the milk in a pail while avoiding drawing the milk at the surface and that at the very bottom of the pail, where germs congregate most. If the milk is to be sent a great distance during hot weather, it is frozen in a freezer. Quite fresh milk does not suffer from freezing, but milk that is a little old curdles as it melts.

60. **Clinical Test for Fat in Feces.**—Hecht describes a modification of Gerber's acido-butyro-metric method for testing milk, adapted for examination of the feces.

Virchow's Archiv, Berlin.

Last indexed, page 997.

66 (CLXXXIII, No. 1.) Participation of Nerve Trunks in Vasomotor Innervation.—Beteiligung der Nervenstämme der hinteren Extremität an der vasomotorischen Innervation der distalen Gebiete derselben, und Veränderung der vasomotorischen elemente nach Beschädigung des N. ischiadicus. M. Lapinsky (Kiev).
67 Ovarian Pregnancy.—Eierstocks-Schwangerschaft. H. W. Freund and R. Thomé. One case.
68 Early Forms of Tuberculosis of Seminal Vesicles.—Frühformen der Samenblasentub. M. Simmonds.
69 Fall von Leber- Venen- und Pfortader-Thrombosis (of veins of liver). Umbreit.
70 Zur Kenntnis der Myelom-Cellen. E. Menne.
71 Primäres Sarkom des Magens (of stomach). A. Fuchs.
72 Primarer melanotischer Gehirn-Tumor (of brain). D. S. Minelli.
73 Zur Kasuistik primärer Multiplizität maligner Tumoren. A. Schmincke. One case.
74 Befunde am chromaffinen System bei Hitzschlag (heat stroke). J. Wiesel.
75 (No. 2.) Zur Kenntnis der Antifermente. H. Beitzke and C. Neuberg.
76 Untersuchungen über die elektrische Leitfähigkeit der Ascitesflussigkeit bei experimentell erzeugter Niereninsufficienz (electric conductibility of ascitic fluid in insufficiency of kidneys). K. Sasaki.
77 Bedeutung der pathologischen Glykogen-Ablagerungen. O. Lubarsch.
78 *Ueber Pankreas-Cirrhose (bei Diabetes). G. Herxheimer.

78. **Cirrhosis of the Pancreas in Diabetes.**—Herxheimer's communication fills 113 pages and is accompanied by several colored plates. He has had opportunity to examine the pancreas in 36 cases of diabetes, and his conclusions are rather against the "islands of Langerhans theory." He is inclined to accept changes in the parenchyma of the pancreas as the cause of diabetes. Recent research by Karakascheff and Reitmann has converted them also to this opinion. In 5 cases described in detail, the alterations in the parenchyma of the pancreas were very pronounced. They were accompanied also by the efforts at regeneration characteristic of cirrhosis of the pan-

creas. This indicates that not only anatomically, but also physiologically, the essential injury inducing the diabetes must be sought in the parenchyma rather than elsewhere in the pancreas.

Zeitschrift f. klinische Medizin, Berlin.

Last indexed, page 921.

79 (LVIII, Nos. 5-6.) *Determination of True Size of Heart with Roentgen Rays.—Bestimmung der sogen. wahren Herzgrösse mittels Roentgenstrahlen. W. Guttmann.
80 *Die Transplantation nicht bösartige Geschwülste (of non-malignant tumors). R. Neumann (von Leyden's clinic, Berlin).
81 Zur Mechanismus der Aorten-Klappen (valves). E. Mai.
82 *Eine klinische Methode zur Bestimmung des Eiweisses im Blute (determination of albumin in blood). Deycke and Ibrahim (Constantinople).
83 *Zur Entfettungstherapie (treatment of obesity). Rheinboldt (Kissingen).
84 Profuse Hematurien und kolikartige Schmerzen bei Nephritis. S. Askanazy. See editorial on page 1114.
85 Ueber die Erzeugung von Antikörpern durch Injektion artfremder Leberzellen (production of antibodies by injection of alien liver cells). L. Michaelis and P. Fleischmann.
86 *Sphygmo-Kardioskop. L. Forstetter (Bialystock, Russia).
87 *Mercurial Inunctions and Their Influence on the Urinary Organs.—Quecksilberschmierkuren und ihre Einwirkung auf die Harnorgane. C. Klieneberger (Königsberg).
88 *Microscopic Stagnation of Stomach Contents as Sign of Cancer in Lesser Curvature.—Mageninhaltsstauung mikroskopischer Art. V. Ziegler (Carlsruhe).
89 Ueber das Vorkommen eines Antipepsins im Magensaft (in gastric juice). L. Blum and E. Fuld.
90 *Influence of Pancreatic Juice and Bile on Digestion in the Intestines.—Der Einfluss des Pankreassaftes und der Galle auf die Darmverdauung. T. Brugsch (Altona).
91 Schlussbemerkungen zur Mechanik der Expektoration. E. Reichmann (Berlin).
92 Consequences of Saline Infusion After Nephrectomy.—Folgen subkutaner Kochsalzzufuhr nach Nephrektomie. Brandenstein and Chajes.

79. **Determination of Size of Heart by Roentgen Examination.**—Guttmann recapitulates the sources of error in Roentgen examination of the heart. It can never give the actual largest diameter of the heart with precision, as it shows only the largest diameter presented at right angles to the direction of the rays. Examination from the front, from the side and from above has each its advantages and its drawbacks. Orthodiagraphy is so unreliable that it is the rarest exception when two views taken of the same person under the same conditions exactly coincide. In conclusion, he remarks that it is really of comparatively little importance to determine the true size of the heart. At the most, the increase in the size of the heart determined in a given individual, if the possibility of blunders can be excluded, will allow certain conclusions in regard to diagnosis and prognosis. In every case, however, greater stress should be laid on the changes in the shape of the heart as a whole and of its various parts, and on functional tests.

80. **Transplantation of Non-Malignant Tumors.**—Neumann reviews the history of transplantation of living tissue. The transplanted elements display only a limited growth as a rule. Even the new growth of fetal tissue elements is checked. Scraps of fetal cartilage on a foreign soil follow their organ-forming tendency, but cease to grow when they have attained maturity. In some instances on record the transplanted tissue caused the production of dermoid cysts, but they remained encapsulated. Transplantation on a foreign soil has an unmistakable inhibiting effect on the proliferation of the transplanted tissue. The inhibiting effect is greater the higher the vital qualities of the soil. Transplantation on an atrophic soil allows more prolific growth. The success in transplanting cancerous tumors on mice was obtained only on animals of the same species. Even the slightest racial difference was enough to prevent the proliferation of the transplanted elements. It has proved impossible to transplant the Jensen mouse tumors from Copenhagen mice on mice in the Berlin Cancer Research Institute, although they belong to the same species. Lanz has been most successful with transplantation of nonmalignant tumors. On the whole, Neumann concludes, transplanted non-malignant tissue is capable of a certain moderate growth, but sooner or later it retrogresses as a rule. In not a single instance has it been found possible to cause the development of an affection with malignant characteristics from transplantation of non-malignant tissue.

82. **Determination of Albumin in Blood.**—Deycke and Ibrahim have modified the Denigès cyano-argentimetric method of determining the albumin in the urine and applied it to the blood. The results have been so constant and the method permits of such precision that they recommend it in high terms after several years' experience and hundreds of tests on 56 patients. The principle of the test is that the albuminoids in the fluid are found and precipitated by a given amount of a potassium-mercury-iodid solution in the presence of acetic acid. They are precipitated in the form of mercury albuminate. In the filtrate, free from albumin, the loss of mercury from the formation of the mercury albuminate is determined in the albumin-free filtrate by the Denigès silver-cyanid method. It was found that the proportion of albumin in the blood was the same as the proportion of hemoglobin. This allows the exact amount of hemoglobin in the blood to be expressed in absolute figures instead of merely in percentages. The details of the simple technic are given in full, with summaries of the 56 cases tested.

83. **Thyroid Treatment of Obesity.**—Rheinboldt describes experiments with dogs showing the remarkable efficacy of thyroid extracts in reducing weight. The by-effects of thyroid treatment have been most numerous in the past when it was applied in obesity, as it is in this that abuse of the preparation is most common. Some of the symptoms observed have evidently been the result of damaged goods, the syndrome suggesting that of sausage poisoning. These mishaps are growing constantly rarer, as the thyroid is not being used so much in its natural form. Under thyroid treatment, he continues, efforts must be made to insure abundant feeding, especially with copious amounts of albumin. The treatment of obesity is favored by undertaking it during a period when the organism, on account of preceding under-feeding, is inclined to take up more albumin than usual. He will report later his experiences with patients treated on these principles.

86. **Sphygmo-Cardioscope.**—The apparatus described shows on a dial the relative behavior of the pulse, heart-action and sounds, as a demonstration of the physiology of the heart and vascular system in their inter-relations. It is designed particularly for teaching purposes, and a reproduction of the dial can be used for a lantern talk.

87. **Mercurial Inunctions and Their Action on Urinary Organs.**—Klieneberger describes the findings in 37 cases after mercurial inunctions. They prove that this method of treatment is not so harmless as generally supposed. Changes in the urine develop almost constantly and are due to the action of the mercury on the secreting parenchyma of the kidneys. As this effect occurs early and after small doses, when manifest albuminuria develops the kidneys are already severely affected and general mercurial intoxication installed. As mercury is such an efficient remedy, we can not dispense with it, he adds, but we should not give it for a long time and without sufficient grounds in chronic nephritis, and even in that case it should be suspended if indications of serious albuminuria develop and casts are found in the urine.

88. **Microscopic Stagnation as Sign of Cancer.**—Ziegler announces that the first and sometimes long the only symptom of cancer in the lesser curvature of the stomach is the discovery of minute remnants of food at a time when the stomach should be empty. Even apparently normal macroscopic motor functions should not overshadow the importance of this sign of cancer in the lesser curvature. The microscopic findings to be conclusive should be repeated at various times and under various conditions. In 2 instances he made a positive diagnosis of cancer of the lesser curvature on this basis alone, contrary to the opinion of the consulting physician. In another case, for the same reason, his diagnosis was incipient cancerous degeneration of an old gastric ulcer in the lesser curvature. No other sign of cancer could be discovered. In these and in other cases the laparotomy confirmed the exactness of his diagnosis. This retention of microscopic relics of the stomach content is characteristic of cancer when, after evacuation of the stomach of the macroscopic remains of the food, microscopic relics persist to the next ingestion of food, not merely for an hour afterward. This daily finding persisted for months in certain patients. The retention is to be distinguished from the old conception of stagnation of stomach contents not only quantitatively but qualitatively as well. As a rule, it

is not even the precursor of the other. In the limited and persistent form to which Ziegler refers, it occurs only under certain conditions, that is, when part of the stomach wall in the lesser curvature or in its vicinity has become rigid by induration and lost its power of peristalsis. This is always the case in malignant disease. The presence of lactic acid bacilli is an early sign of retention, even of these microscopic amounts. Their resistance to lavage of the stomach is another important point for this indirect diagnosis of cancer. In late years his examination of cases of cancer of the lesser curvature has confirmed more and more the great diagnostic importance of the finding of these bacilli when the motor functions of the stomach are still apparently intact. In patients whose stomachs were apparently free from food at latest two and a half hours after a test breakfast without milk and seven hours after a test meal, he examined the stomach an hour or so later and again the next morning fasting. The little mass of mucus found in the opening in the tip of the sound was then examined under the microscope. These few mucous drops contain the evidences of the microscopic stagnation. They are examined for bacilli, for grains of starch, fibers of meat and droplets of fat. Leucocytes are also liable to be present, and suggest the point where the stagnation of the microscopic relics takes place. These findings can be encountered for weeks and months, without other symptoms, if the cancer does not happen to develop toward points where characteristic symptoms must follow. In his typical cases of this isolated microscopic retention there were no traces of blood, no tumefaction, cachexia, ascites nor glandular swelling. At most, only a family tendency, anemia and the peculiar pain in the back were observed. The microscopic stagnation persisted unmodified, even after rinsing the stomach with an infusion of tea or hops or a solution of silver nitrate. In non-cancer cases there is none of this microscopic retention. The stagnation is either macroscopic or entirely absent. The lactic-acid bacilli are also readily banished by one or two rinsings of the stomach. Their resistance to rinsings is characteristic of a malignant process.

90. **Influence of Pancreatic Juice and of Bile on Intestinal Digestion.**—Brugsch concludes his extensive monograph with the statement that processes affecting the functions of the pancreas and reducing the output of pancreatic juice diminish the absorption of fat in the intestines, but scarcely affect the splitting of the fat. He found, further, that uncomplicated exclusion of the bile was accompanied by a loss of about 45 per cent. of the fat in the stools. Consequently, if a larger proportion of fat is lost, it suggests participation of the pancreas in the trouble causing the icterus. When the pancreatic juice is shut off and the bile nearly so, from 80 to 90 per cent. of the fat is lost. The average loss of nitrogen in uncomplicated icterus is about 11 per cent., but when accompanied by a pancreatic affection, about 33 per cent. The carbohydrates are well utilized in cases of pancreas affections. Accelerated peristalsis in the small intestine is liable to entail a loss of fat up to 40 per cent., even when the secretion of bile and pancreatic juice is normal. Catarrh of the small intestine also hinders absorption of nitrogen and fat. When the proportion of dried stool is over 30 per cent., it should arouse suspicion of disturbance in the absorption of fat. The proportion of fat in the dried stools in case of icterus may amount to 80 per cent.; the average in case of a pancreatic affection is 60 per cent. In case of considerable loss of nitrogen the percentage of fat can drop still lower, and hence the proportion of fat in the stools should not serve alone as a sign of a certain disturbance in the absorption of fat. He adds other conclusions from study of diabetics and of dogs after removal of the pancreas. He did not find any essential difference in regard to the absorption of fat and nitrogen in man and in dogs after exclusion of the pancreatic juice. The particulars of his research on 15 patients are given in detail.

Gazzetta degli Ospedali, Milan.

Last indexed, page 625.

93 (XXVI, No. 151.) *Action of Tuberculous Serum and of Antibacillary Serum in Resistance of Organism to Tuberculous Infection.—Azione del siero di sangue di tubercoloso, e quella del siero specifico antibacillare, nella resistenza dell' organismo contro l'infezione sperimentale. S. Livierato (Maragliano's Institute, Genoa).

94 Oysters and Typhoid Fever.—Consumo dei frutti di mare e il tifo a Mestre. G. Appiani.

95 Influenza dei sali di calcio sulla pressione osmotica del sangue (influence of calcium salts). G. Spadaro.

96 *Forme anatomiche e cliniche della cirrosi biliare. C. Alessandro.

93. **Antibacillary Serum in Experimental Tuberculosis.**—Livierato has been treating animals with an aqueous extract of living tubercle bacilli. Their serum acquired antibacillary properties with little antitoxic power, but it agglutinated when diluted 1 to 2,000. About 1.5 mg. of living, virulent tubercle bacilli, all from the same culture, with 1 c.c. of salt solution were put in small collodion sacs. The sacs were then placed between the loops of the intestine in guinea-pigs, one in each animal. The animals were then separated into three groups: the first group received no treatment, the second group was treated with serum from tuberculous patients, and the third group with the prepared antibacillary serum. The latter displayed marked curative power, preventing the development of the experimental tuberculosis in the animals and killing the bacilli in the test tube. The serum of tuberculous patients failed to show any curative action.

96. **Types of Cirrhosis of the Liver.**—Besides the types usually observed, Alessandro has encountered cases of cirrhosis of the liver with chronic icterus, slight hypertrophy of the liver and enormous hypertrophy of the spleen. He reports such a case and also one of still another type of cirrhosis of the liver. In the latter the liver is of normal size or slightly smaller than normal, and the spleen is also normal, but the kidneys are the seat of severe and constant lesions, the result of the severe and chronic icterus. Alcohol probably aids the development of this type also. The case he describes was in a mechanic of 49, addicted to liquor. The influence of the alcohol in these cases is like that of the typhoid toxins in the cases of cirrhosis of the liver following typhoid fever. The long interval that may elapse before the first symptoms appear is not an argument against this etiology, as osteomyelitis and gallstones may likewise remain latent for a long time. In one such case the biliary symptoms developed almost at once, while the cirrhosis did not manifest itself until nine years later. Agglutination was positive, even at the tenth year.

Norsk Magazin for Laegevidenskaben, Christiania.

Last indexed page 1246.

97 (LXVII, No. 3.) Mistakes in Diagnosis.—Diagnostike feiltagelser. H. J. Vetlesen.

98 Om glykosuri. H. C. Geelmuyden.

99 *Roentgen-Behandling af maligne tumores. S. A. Heyerdahl.

100 Om poliomyelit-mikroben. H. G. Dethloff.

99. **Roentgen Treatment of Malignant Disease.**—Heyerdahl's experience has been eminently favorable, especially with rodent ulcer. His 11 patients with rodent ulcer were all cured and also 4 patients with superficial epithelioma. The latter growths did not respond quite so promptly as the rodent ulcers. He reports other forms of cancer treated with varying success.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

FIFTY-SEVENTH ANNUAL REPORT of the Board of Trustees and Superintendent of the Central Indiana Hospital for Insane, at Indianapolis, Ind., for the Fiscal Year Ending Oct. 31, 1905. To the Governor. Paper. Pp. 91. Indianapolis: W. B. Burford, Printer. 1906.

THE HEREDITARY TRANSMISSION OF THE YELLOW-FEVER PARASITE IN THE MOSQUITO. By M. J. Rosenau and J. Goldberger. Report of Working Party No. 3. Yellow Fever Institute. January, 1906. Paper. Washington: Government Printing Office.

NINETEENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH of the State of Ohio for the Year Ending Dec. 31, 1904. Cloth. Pp. 618. Springfield, Ohio: The Springfield Publishing Co. 1905.

THE MODERN MATERIA MEDICA. The Source, Chemical and Physical Properties, Therapeutic Action, Dosage, etc. Cloth. Pp. 306. Price, $1.50. New York: The Druggists Circular. 1906.

THE INTERNATIONAL MEDICAL ANNUAL. A Year-Book of Treatment and Practitioner's Index. Twenty-fourth Year. Cloth. Pp. 588. Price, $3.00. New York: E. B. Treat & Co. 1906.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION for the Year 1905. Vol. XXI. Cloth. Pp. 218. Detroit: Printed for the Association. 1905.